



Pharmacy Practice

ISSN: 1885-642X

journal@pharmacypractice.org

Centro de investigaciones y
Publicaciones Farmacéuticas
España

PUSPITASARI, Hanni P.; ASLANI, Parisa; KRASS, Ines
Challenges in the management of chronic noncommunicable diseases by Indonesian
community pharmacists
Pharmacy Practice, vol. 13, núm. 3, 2015, pp. 1-12
Centro de investigaciones y Publicaciones Farmacéuticas
Granada, España

Available in: <http://www.redalyc.org/articulo.oa?id=69041179003>

- How to cite
- Complete issue
- More information about this article
- Journal's homepage in redalyc.org

redalyc.org

Scientific Information System

Network of Scientific Journals from Latin America, the Caribbean, Spain and Portugal

Non-profit academic project, developed under the open access initiative

Original Research

Challenges in the management of chronic noncommunicable diseases by Indonesian community pharmacists

Hanni P. PUSPITASARI, Parisa ASLANI, Ines KRASS.

Received (first version): 24-Feb-2015

Accepted: 27-Jun-2015

ABSTRACT*

Objectives: We explored factors influencing Indonesian primary care pharmacists' practice in chronic noncommunicable disease management and proposed a model illustrating relationships among factors.

Methods: We conducted in-depth, semistructured interviews with pharmacists working in community health centers (Puskesmas, n=5) and community pharmacies (apotek, n=15) in East Java Province. We interviewed participating pharmacists using Bahasa Indonesia to explore facilitators and barriers to their practice in chronic disease management. We audiorecorded all interviews, transcribed ad verbatim, translated into English and analyzed the data using an approach informed by "grounded-theory".

Results: We extracted five emergent themes/factors: pharmacists' attitudes, Puskesmas/apotek environment, pharmacy education, pharmacy professional associations, and the government. Respondents believed that primary care pharmacists have limited roles in chronic disease management. An unfavourable working environment and perceptions of pharmacists' inadequate knowledge and skills were reported by many as barriers to pharmacy practice. Limited professional standards, guidelines, leadership and government regulations coupled with low expectations of pharmacists among patients and doctors also contributed to their lack of involvement in chronic disease management. We present the interplay of these factors in our model.

Conclusion: Pharmacists' attitudes, knowledge, skills and their working environment appeared to influence pharmacists' contribution in chronic disease management. To develop pharmacists' involvement in chronic disease management, support from pharmacy educators, pharmacy owners, professional associations, the government and other stakeholders is required. Our findings highlight a need for systematic coordination between pharmacists and stakeholders to improve primary care pharmacists' practice in Indonesia to achieve continuity of care.

Keywords: Community Pharmacy Services; Professional Practice; Attitude of Health Personnel; Qualitative Research; Indonesia

INTRODUCTION

Updated projections of global mortality from 2015 to 2030 rank ischaemic heart disease and stroke as the top two causes, with similar trends predicted to occur in both high-income countries (HICs) and low- and middle-income countries (LMICs) in the European Region, Eastern Mediterranean Region, and South-East Asia Region.¹ In Indonesia, although the burden of communicable diseases remains high, cardiovascular diseases (CVDs) have been reported as the leading causes of death.² In common with other LMICs, Indonesia is facing a double burden of disease from both communicable and noncommunicable chronic diseases.³

The fundamental management of chronic diseases differs from acute care because it crucially depends on long-term follow up with regular monitoring.⁴ It has been suggested that primary health care is the most appropriate setting for chronic care because of its relative proximity to the patients' home enabling providers to easily deliver follow-up, resulting in more effective continuity of care.^{4,5} Based on the Chronic Care Model⁵, interactions between patients and health care providers will occur in health systems that have well-developed organizational health care supported by adequate resources and policies. This suggests that governments around the world need to have well-established primary care teams to address challenges of chronicity.

In LMICs in Asia and Africa, the primary health care development strategy has been implemented by establishing community health centers (CHCs).⁶ In Indonesia, a CHC is a public health care facility, which is supported and supervised by the District Health Office (DKK).⁷ In addition to CHCs, there are other forms of primary health care facilities, as described in Table 1. To enable these facilities to provide comprehensive health services, support services from clinical laboratory and pharmacy (apotek) units are required. These support facilities can be either incorporated within the primary health care facilities or available independently.⁸

Because pharmacy assistants have been able to fulfil the distributive function in medicine supply within Puskesmas, it has not been considered necessary to employ qualified pharmacists.⁹ Following the issuance of the Government Regulation 51/2009 regarding pharmacists' responsibility for pharmaceutical work in health care facilities¹⁰, the DKK in Surabaya (the capital city of East Java Province) has taken advantage of its additional authority under the 2001 Indonesia's decentralized health system¹¹ to initiate the

* **Hanni Prihastuti PUSPITASARI**. BSc(Pharm), MPhil. Lecturer at Universitas Airlangga, Fakultas Farmasi in Surabaya, East Java Province (Indonesia). hanni.puspitasari@sydney.edu.au

Parisa ASLANI. BPharm(Hons), MSc, PhD, Grad.Cert.Ed.Stud. (Higher Ed.), is an Associate Professor. Faculty of Pharmacy, University of Sydney. Sydney, NSW (Australia). parisa.aslani@sydney.edu.au

Ines KRASS. BPharm, Dip.Hosp.Pharm., Grad.Dip.Educ.Studies (Health Ed.), PhD. Professor. Faculty of Pharmacy, University of Sydney. Sydney, NSW (Australia). ines.krass@sydney.edu.au

Table 1. Primary health care facilities in Indonesia		
Facility	Sector	Location
Community health centers (CHCs)	Public	Sub-districts, at least 1 CHC per sub-district*
Physician practices	Private, run by physicians who may also work in public sector	Not specified, but within the relevant district
Dentist practices	Private, run by dentists who may also work in public sector	Not specified, but within the relevant district
Primary clinics	Public/private	Not specified, but within the relevant district
Primary hospital type D	Public/private	Remote areas

* A sub-district is the division of administrative region under a district/city, and includes health-related facilities.

placement of pharmacists in almost all Puskesmas in Surabaya on a local government contract.⁹

Despite efforts to improve public health service delivery through decentralization¹¹, the quality of public health facilities remains poor resulting in a high demand for private sector health care services, even in preference to highly subsidised public services.¹² Chee, Borowit, and Barraclough also reported that approximately half of Indonesians self-treated their illness and sought health care from private apotek.¹² However, the quality of private pharmacy services in Indonesia, similar to other LMICs¹³, has been reported as suboptimal, mainly due to poor professional standards and lack of pharmacists' attendance so that activities including advising clients have usually been delegated to nonpharmacist staff.^{14,15}

Since the introduction of the Pharmaceutical Care concept by Hepler and Strand¹⁶, there has been a global paradigm shift in professional pharmacy practice, from a purely supply focus to a patient-centered approach. In delivering pharmaceutical care, "a pharmacist cooperates with a patient and other professionals in designing, implementing, and monitoring a therapeutic plan that will produce specific therapeutic outcomes for the patient".¹⁶ To help Indonesian pharmacists implement the pharmaceutical care model and improve the quality of pharmacy services, the Department of Health (DOH) issued pharmaceutical services guidelines in Puskesmas and standards in apotek^{17,18}, which have just been revoked and replaced with the recent Minister of Health Regulations.^{19,20} In respect to CVD, the DOH has also endorsed pharmaceutical care pocket books for caring for people with risk factors such as diabetes mellitus and hypertension^{21,22}, as well as patients with coronary heart disease.²³

To bring about practice change in the community setting, Hagemer proposed that pharmacy educators have a responsibility to adequately prepare future practitioners to enable them to deliver patient-centered care.²⁴ In the context of preparing health care practitioners, the educators do not necessarily need to be academics. Preceptors, pharmacy practitioners who facilitate practice-based learning for students prior to entry into the profession are also pivotal in serving as role models and ensuring that the necessary professional attitudes, knowledge and skills are acquired by trainee pharmacists.²⁵

Based on research exploring Indonesian primary care pharmacists' scope of practice in CVD

prevention and management, we found that the majority of pharmacy preceptors from both apotek and Puskesmas in East Java Province only provided the most basic practice exclusively focusing on dispensing and medicine counseling, whereas the provision of comprehensive pharmaceutical care was uncommon (the results have been reported at the Australasian Pharmaceutical Science Association (APSA) Conference 2013 and the International Social Pharmacy Workshop (ISPW) 2013). In this article, we present research findings on factors influencing their practice as well as a model illustrating relationships among factors.

METHODS

Research design

We conducted an exploratory qualitative study using in-depth, semistructured, face-to-face interviews using an approach informed by "grounded-theory".^{26,27} We received ethical clearance from the University's Research Ethics Committee in Surabaya prior to the commencement of the study between June and August 2013. We interviewed pharmacy preceptors who worked at apotek in East Java Province and at Puskesmas in Surabaya who were in partnership with the Faculty of Pharmacy at the University.

We applied a maximum variation sampling approach²⁷ to enable sampling a wide variety of apotek pharmacists, with respect to gender, position in apotek, and years of practice experience. We also sought representation of pharmacists working in different types of apotek (independent or chain) and locations (within residential areas or in close proximity to hospitals). In terms of Puskesmas pharmacists, we recruited male and female pharmacists working in different types of Puskesmas (with or without inpatient care and small or large with respect to numbers of prescriptions dispensed per day).

We developed an interview protocol based on our research exploring Australian community pharmacy practice in CVD prevention and management^{28,29} and our experience of Indonesian pharmacy practice. The protocol covered three main topics: (1) pharmacists' awareness of CVD prevention and management, (2) the nature of support provided to patients with CVD, and (3) facilitators and barriers to respondents' practice. The results of the first two topics have been reported at the APSA Conference 2013 and the ISPW 2013. Table 2 presents questions about the third topic. During pilot

Table 2. Interview protocol	
Questions	Prompts
What do you think are the factors that help you engage in activities which support secondary prevention of CVD among your patients?	Personal factors: perceived importance? Job satisfaction?
	Patient factors: motivation?
	Doctor factors: expectation?
What prevents you from getting more involved in supporting secondary prevention of CVD?	Personal factors: knowledge? Interest? Skills?
	Patient factors: health beliefs? Lack of motivation? Language barrier?
	Doctor factors: poor communication?
	Organizational factors: time? Staff? Private counseling area? Financial support?
If NOT offering support to patients with CVD, what makes it difficult for you?	Personal factors: knowledge? Interest? Skills?
	Patient factors: health beliefs? Lack of motivation? Language barrier?
	Doctor factors: poor communication?
	Organizational factors: time? Staff? Private counseling area? Financial support?

interviews, we also received inputs from two pharmacists who worked in apotek and Puskesmas to amend the interview protocol.

Interview procedure

First, we obtained a list of pharmacists from the Faculty Intern Training Program (ITP) Unit. From the list, we identified pharmacists fitting the criteria as described above and sent them invitation letters through electronic mail or handed them out face-to-face where appropriate. Approximately one week after administering the first invitation, we followed up pharmacists who had not responded using telephone calls. Subsequently, we sent a participant information statement to pharmacists who were willing to take part in the study. Those who agreed to participate were contacted to arrange a date, time and venue for an interview at their convenience. We obtained written consent from all participants prior to the interviews.

A researcher who is a native Bahasa Indonesia speaker carried out all interviews in this language. We audiorecorded all interviews and transcribed them ad verbatim. The interviewer translated the entire transcript and a bilingual translator reviewed the translation.

Our primary objectives were to investigate Indonesian pharmacists' scope of practice and specific factors influencing their practice of CVD prevention and management. In the event that there were very limited CVD services provided, we continued the interviews to identify factors influencing general pharmaceutical care practice.

Grounded-theory analysis

Coding is a key process in grounded-theory analysis.²⁶ Two researchers created major themes of data in open coding, followed by intermediate coding to connect sub-themes of each major theme and selective coding to develop the interrelationship of themes. We constantly compared data collected during interviews with emerging themes (constant comparative analysis).^{26,27} We continued the interviews until "saturation", when no new themes emerged.²⁶ Subsequently, we verified themes to generate a theory. The Chronic Care Model⁵ was also used to guide the development of a theory.

RESULTS

We invited 21 apotek pharmacists and 15 Puskesmas pharmacists to participate in the study (27 via electronic mails, nine face-to-face contacts). Among eight who declined, several felt ineligible to participate because they had not engaged with activities other than dispensing medicines. Data saturation was reached after analysing data from 20 interviews (15 apotek pharmacists and five Puskesmas pharmacists). On average, the length of interviews was 50 minutes, ranging from 24 to 75 minutes. We present characteristics of the participants in Table 3.

We extracted five emergent themes as factors influencing pharmaceutical care practice in the primary health care setting. These factors were not mutually exclusive and identified to be related to pharmacists' attitudes, Puskesmas or apotek environment, pharmacy education, pharmacy professional associations, and the government. The themes outlined below were ordered from themes that were identified in all interviews, to themes that were reported by several respondents. Subsequently, we synthesized the data to propose a model illustrating relationships among the factors.

Pharmacists' attitudes

We identified that respondents' attitudes consisted of their own attitudes toward their role in the management of CVD and pharmaceutical care in general as well as their perceptions of patients' and doctors' beliefs about pharmacists' professional role beyond medicines supply. A majority of respondents believed that primary health care pharmacists play an important role in medicine counseling and monitoring the use of medicines in patients with CVD, as well as giving advice on lifestyle modification. Few, however, regarded counseling about the disease and ongoing monitoring as within the scope of their role. Some believed that monitoring patients' conditions was exclusively the doctors' role. Equally, they expressed their lack of competence in delivering such a service.

"I feel that offering [monitoring patients' clinical conditions] I'm afraid the result would be different from the doctor's. And we're not entitled to do it... we're not competent. I'm too afraid to go beyond pharmacist's authority."
(Apotek06)

Table 3. Characteristics of the participants	
Characteristics of pharmacists	
	n = 20
Female, n (%)	12 (60)
Position, n (%)	
Proprietor – <i>Apotek</i>	8 (40)
Pharmacist in charge – <i>Apotek</i>	5 (25)
Permanent pharmacist – <i>Apotek</i>	2 (10)
Pharmacist – <i>Puskesmas</i>	5 (25)
Age (years), mean (range)	43 (28 – 64)
Years of experience as a community pharmacist, mean (range)	14 (2 – 34)
Work hours per week, mean (range)	38 (6 – 105)
Characteristics of <i>Apotek</i>	
	n = 15
Surabaya, n (%)	8 (53)
Types, n (%)	
Independent	13 (87)
Chain	2 (13)
Numbers of pharmacists working per week, mean (range)	2 (1 – 4) ^a
Numbers of nonpharmacists working per week, mean (range)	9 (2 – 21)
Numbers of prescriptions dispensed per week, n (%)	
Less than 100	7 (47)
100 – 500	5 (33)
More than 500	3 (20)
Additional services ^b , n (%)	
Homecare, focusing on diabetes mellitus	3 (20) ^c
Health screening, e.g. blood pressure, blood glucose, body mass index	5 (33)
Characteristics of <i>Puskesmas</i>	
	n = 5
Numbers of pharmacists in all business days, mean (range)	1 (1 – 2)
Numbers of nonpharmacists in all business days, mean (range)	1 (1 – 2)
Numbers of prescriptions dispensed per day, n (%)	
Less than 100	1 (20)
More than 100	4 (80)
Additional services ^b , n (%)	
Homecare, focusing on palliative and/or tuberculosis	5 (100)
Health screening, e.g. blood pressure, blood glucose, body mass index	5 (100)
Integrated service unit for elderly people (<i>Posyandu lansia</i>) ^d	5 (100)
Traditional medicines, including herbal medicines (<i>Batra</i>)	2 (40)
Inpatient care, focusing on maternity care and/or anti-narcotics	2 (40)
^a In some business hours, several <i>apotek</i> employ none pharmacist	
^b Responses are not mutually exclusive	
^c In one of the three <i>apotek</i> , the service is only provided when they have intern pharmacists working	
^d Integrated service unit for elderly is a form of community movement which is managed by health volunteers who are supported by health care professionals, including the pharmacist to address common diseases for elderly people, especially degenerative diseases.	

The lack of a role for pharmacists in the management of CVD was also attributed to the fact that CVD was infrequently managed in primary health care. Therefore, the majority considered that it was a major challenge for primary health care pharmacists to offer any clinical services to patients with CVD. Several respondents highlighted the need for pharmacists to adopt more positive attitudes to delivery of clinical services and apply the concept of pharmaceutical care in their daily practice.

*“Not many patients with cardiovascular diseases collect prescription medicines in small *apotek* like mine. They might have got their medicines from hospitals.” (Apotek01)*

“The pharmacist plays a critical role. Why? Because we are at the frontline of health services... Therefore, we have to change our attitudes and implement [the concept of] pharmaceutical care... The problem is whether or not we are willing to make changes.” (Apotek05)

Patients' and doctors' perceived negative attitudes toward any extension of the pharmacists' professional role were also regarded as a significant

barrier. Many respondents highlighted that most patients perceived the pharmacist's responsibility was only to supply medicines and believed that anything relating to their therapy was strictly their doctor's responsibility. Similarly, many respondents believed that the doctor perceived the pharmacist as a medicines provider only with no involvement in patients' therapy. This discouraged pharmacists from offering additional services.

“Many people do not acknowledge the pharmacist [as a health care professional] and believe that we are medicines providers only. Therefore, they assume that any services we offer are associated with selling our products.” (Apotek01)

“The doctor says, ‘The pharmacist does not need to understand about patient therapy. The most important thing [from the pharmacist] is dispensing medicines.’ (Apotek08)

Puskesmas and *apotek* environment

We identified factors within the Puskesmas and *apotek* health systems that influenced pharmacists' ability to take a role in CVD care. These factors include workload, staffing, infrastructure (e.g.

private area, documentation), and salary. Subsequently, we classified these factors under the second major theme "Puskesmas and apotek environment".

All Puskesmas pharmacists in this study reported that their activities involved administration, compounding, dispensing, and other Puskesmas programs, including health promotion for the elderly integrated service unit and homecare to patients with tuberculosis and/or cancer (Table 2). They acknowledged that counseling, where possible, was limited to medicines. Moreover, because of a lack of staff and high workload, they found it difficult to document and monitor patients' use of medicines and adherence to therapy. Additionally, some believed that because of the unavailability of medical specialists, limited types of medicines and facilities for laboratory tests, they were unable to provide advanced support to patients with CVD.

"We [Puskesmas in Surabaya] are fortunate to have pharmacists working... But they [the government] thought that employing one pharmacist in each Puskesmas is enough. In fact, we have enormous [administrative] workload. Eventually, we find it hard to provide patient-oriented services." (Puskesmas05)

"We hardly ever see cardiovascular disease at Puskesmas because Puskesmas only provides basic health services. So, such patients who might need intensive care should be referred [to hospital]. It's not feasible to offer advanced services at Puskesmas without adequate resources." (Puskesmas04)

In CVD care, many apotek respondents expressed the importance of documentation in monitoring patients' use of medicines and their conditions. However, because of time constraints, they found it challenging to maintain any documentation. It was also noted by several apotek pharmacists that patients do not always come to the same apotek making it difficult to monitor conditions such as CVD. However, they reported that patients covered by a health insurance scheme were more likely to visit their doctor and collect their medicines regularly, and that the insurance company provided support in the form of pharmacy software to enable documentation about the use of medicines. Monitoring patients' conditions was further challenged by the fact that many patients were unwilling to visit their doctor for monitoring of their conditions, and collected their regular medicines without a prescription.

"I don't provide medication records... Because firstly, the patient is shopping around. They don't stick to one apotek. Secondly, staff shortage. Thirdly, it is time consuming... Also, we often don't receive the prescription... I have told [the patient that] the medicines have to be collected with a prescription, [but they become] angry. ... Sometimes the patient does not understand that visiting their doctor is not about getting a piece of prescription, but

for monitoring. Well, it is understandable [if the patient is unwilling to visit the doctor] because doctor's fee is quite expensive. So, how can we monitor?" (Apotek02)

Several apotek respondents also noted a lack of support from apotek owners for pharmacists to provide pharmaceutical care. This was demonstrated through low salaries for pharmacists and failure to provide private areas where pharmacists could counsel patients effectively. It was also believed that as a consequence of low salaries, many apotek pharmacists had low levels of motivation to apply pharmaceutical care practice, or were reluctant to be present in the apotek. However, the few respondents who were able to offer a comprehensive support service to patients with CVD expressed the view that pharmacists should demonstrate their ability in the provision of pharmaceutical care before expecting a higher salary.

"The obstacle is if [the pharmacist] works with a profit-oriented apotek owner [who doesn't have a pharmacy background]... We don't have a private area to offer professional services. [The pharmacist] would like to be present everyday but [the owner only gives] a low salary." ... "There are many new graduates [pharmacists] who do not want to be labeled 'unemployed'. [So] how could you expect [apotek pharmacists with a low salary provide] a professional practice? I think that is the main problem." (Apotek02)

"I don't think that apotek owners restrict pharmacists who want to offer additional services. I don't think that apotek owners refuse to increase pharmacists' salary or give additional benefits if the patients satisfy [with the services] and become loyal. I don't think so. Sometimes the pharmacist demands their rights before demonstrating their ability." ... "[Ironically,] they often feel lack of confidence. Why? [Do they think] lack of knowledge? Lack of skills?" (Apotek09)

In addition to low salaries, some Puskesmas respondents felt that their position as contract workers was insecure and perceived a lack of recognition of their professional role by the government. This served as a disincentive to providing pharmaceutical care.

"As contract workers, there is no job security [for us]... Look, we only receive a basic salary and are not entitled to any benefits [unlike other health professionals with permanent employment status]." ... "It looks like as health professionals, we are only recognized to have limited scope." (Puskesmas04)

Pharmacy education

Pharmacists' knowledge and skills as well as the potential role of pharmacy educational institutions in improving pharmaceutical care practice emerged in many interviews. We then categorized these factors under the theme "pharmacy education".

There were mixed views about whether or not pharmacists were adequately educated and skilled to deliver chronic management support to patients with CVD. A majority expressed the view that it was because pharmacists lacked knowledge about CVD prevention and management that they did not offer support to patients. Several also noted that generally pharmacists lacked effective communication skills. As a result, they were less likely to interact with patients and doctors. Others felt that knowledge and skills gained during pharmacy programs were adequate preparation for delivering pharmaceutical care, however, recognized the need for continuing professional development to update knowledge and skills after completing their degrees. Meanwhile, others believed that a review of the pharmacy curriculum is essential to ensure that pharmacy graduates are adequately prepared for extended professional roles in practice.

"Well, I think [knowledge and skills obtained during undergraduate and professional programs are] enough. However, not all pharmacists update their knowledge after completing their formal education, so this becomes a hindrance. If the pharmacist contacted the doctor to ask a question per se without having a good understanding about the topic and unable to offer any solution about the patient's [medicine-related] problem, the doctor would give undesirable response." (Apotek01)

"I think [the readiness of pharmacists to provide professional services] depends on which pharmacy schools they undertook their [undergraduate pharmacy] training from because I notice that learning methods and contents vary among pharmacy schools... Well, the quality of pharmacy graduates should be reviewed." (Apotek02)

In addition, it was noted that pharmacy educational institutions should contribute to improving professional practice in Indonesia through representations to the government to influence the development of policy on pharmaceutical care. This was especially the case because respondents doubted about the ability of the existing professional associations (IAI— representing pharmacists and GPFI— representing pharmaceutical industries, distributors and apotek) to do so because of conflicts of interest.

"I think professional organizations are responsible [for making changes about pharmacy practice]. However, it isn't possible to make this strategy work because there are conflicts of interest within professional organizations." ... "It is related to government policies and the government is likely to take suggestions from educational institutions into consideration [not from professional organizations]. The best approach might be through [pharmacy] educational institutions that can play a key role in contributing to national reforms." (Apotek03)

Pharmacy associations

We grouped factors such as pharmacist training, leadership and guidelines in this section because we viewed that these factors are related to pharmacy associations. Almost all participants believed that professional associations play an important role in supporting pharmaceutical care practice. The most common support expected from professional associations was opportunities for continuing professional development through advanced training to improve pharmacists' knowledge and skills. According to some respondents professional associations should work with pharmacy educational institutions to develop advanced training programs and develop professional practice standards and practical guidelines for pharmacists. However, this can only be effective with strong leadership within professional associations.

"To be able to conduct professional practice, we should have competency standards, practice standards, and practical guidelines. Competency standards have been concurred... but [professional organizations have] not had practice standards." (Apotek07)

"Generally, [members of pharmacy] professional organizations are if they were practitioners, they would understand [about how to give guidance to practicing pharmacists]. Otherwise, it would be hard for us [to provide professional practice] without leadership [from professional organizations]." (Apotek11)

Although there were no practical guidelines from professional organizations, with regards to CVD, a few respondents could name the guidelines endorsed by the DOH.

"Actually the Department of Health has endorsed pharmaceutical care books for [patients with] cardiovascular [disease] but, well, we are not familiar to use it." (Apotek05)

The government

Issues related to government policies about pharmaceutical care in general, and specifically about CVD and health insurance regulations were viewed by several respondents to impact on pharmaceutical care practice. We clustered these factors under "the government" theme.

Several respondents noted that patients usually try to get the cheapest medicines so they were unlikely to visit the same pharmacy to collect their medicines. Because this was viewed as a negative influence on the delivery of pharmaceutical care, pharmacists believed that Indonesian pharmaceutical care practice in the primary health care setting could be improved if practitioners were involved in the development of government policies, including development of the national social health insurance system in achieving Universal Health Coverage (UHC) in Indonesia. Moreover, because the absence of pharmacists in many apotek was considered as a major barrier to implementing pharmaceutical care practice, some respondents

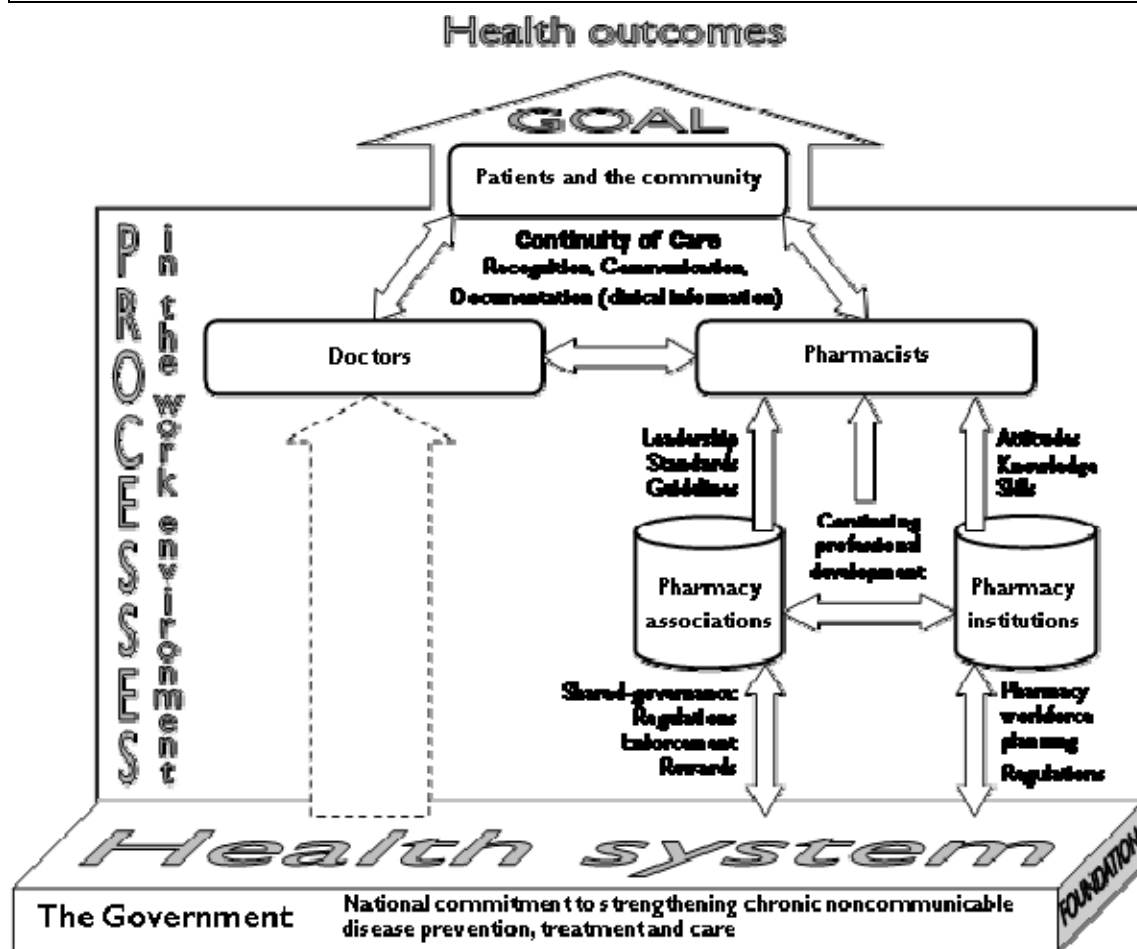


Figure 1. Relationships among factors influencing community pharmacist practice in Indonesia.

emphasized the need for law enforcement of pharmacy regulations to ensure that pharmacists are always present.

"[Government] regulations should be improved, followed by law enforcement... Local governments work with local professional organizations. [Pharmacy's license] should be revoked if the practice doesn't comply with the regulations." ... "[Insurance] regulations [are also needed] to make the patient visit the same apotek. If the patient pays for their medicines out of their own pocket, they will shop around for the cheapest medicines." (Apotek02)

"It is important to regulate [pharmaceutical care practice]... However, the government issues regulations without having a good understanding about it, you know. Why? Because [the policy makers are] not engaged in practice. If we [practitioners] got involved, [the policies] would suit our needs." (Apotek07)

With regard to CVD prevention and management, some respondents believed that lack of services provided to patients was as a result of the governments' primary focus on managing infectious diseases despite a high prevalence of CVD.

"I notice that the government gives a priority to TB [tuberculosis] programs. In fact, there is

a high prevalence of hypertension, and CVD has become the leading cause of death. There are no programs [specific] for CVD because it is considered not infectious." (Apotek15)

Relationships among factors influencing pharmaceutical care practice

As described in the introduction to this paper, the Chronic Care Model⁵ suggests that well-developed organizational health care with improvements in the delivery system design and clinical information systems supported by adequate resources and policies is required to allow patient-provider interactions in continuity of care. Based on our findings, regular interactions between patients, the community and health providers, in this case doctors and pharmacists are driven by positive attitudes as reflected through recognition of each other's roles and their ability to communicate (Figure 1). These relationships represent one of four criteria that must be met when implementing the pharmaceutical care concept.¹⁶ Finally, to facilitate clinical services, the pharmacist requires support from (a) pharmacy institutions to acquire and adopt the necessary professional attitudes, knowledge and skills, (b) pharmacy associations in the form of practice standards, guidelines, and leadership, and (c) within the landscape of a strong health system through the availability of resources, regulations, enforcement and long-term planning.

DISCUSSION

We uncovered challenges faced by primary care pharmacists in Indonesia in contributing to health care services for patients with chronic noncommunicable diseases, focusing on CVD prevention and management. The results of the current Indonesian study accord with those of our previous Australian study²⁹, which showed that stakeholder attitudes, pharmacy environment, professional associations and government policies influenced pharmacists' ability to provide support to patients with CVD. However, in contrast to the Australian study, the role of pharmacy education emerged as a key factor influencing current practice in Indonesia. Moreover, the interplay of factors influencing practice demonstrates the complexity of these challenges. In this context, whereas lack of involvement in chronic disease management might be because of negative attitudes toward a pharmacists' clinical role, equally it might be the result of inadequate knowledge and skills, and working in an environment lacking professional standards, guidelines, leadership and regulations.

It has previously been suggested that "an effective response to chronic diseases demands long-term planning, inter-sectoral responses, and consistent investment that can be sustained over a long time".³⁰ In this article, we present a model that demonstrates the inter-sectoral challenges, including health, education, and governance sectors, as well as the need for coordination across sectors in caring for patients with chronic noncommunicable diseases in the primary health setting. To our knowledge, this model is the first comprehensive analysis of elements that should be considered to enable pharmacists in a LMIC to implement pharmaceutical care practice using CVD as an exemplar.

Negative attitudes toward pharmacists' role in patient care

Consistent with studies from HICs and other LMICs³¹⁻³⁴, we found that attitudes of doctors and patients as well as pharmacists themselves appeared to be a significant barrier to the delivery of patient-centered services by pharmacists. Based on in-depth interviews with Indonesian health officers from provincial and district levels as well as the heads of Puskesmas and Puskesmas pharmacists, several researchers reported that the pharmacists' actual role in Puskesmas is primarily managing drug supply.⁹

However, as previously noted²⁹, such attitudinal barriers might reflect stakeholders' and pharmacists' lack of knowledge and recognition about the evolving role of pharmacists. In the delivery of pharmaceutical care, pharmacists need to be involved in activities beyond dispensing and medicine-related counseling and monitoring. To enable doing so, they need to work closely with other health providers. Therefore, strategies to raise awareness within the profession, across different professions and throughout the community are required. One strategy might include recognition of the pharmacy profession in government documents. Additionally, using appropriate role models and

practice sites during preregistration pharmacy education has been considered essential to facilitate pharmacists' adoption of the pharmaceutical care model.³⁵ Thus, as shown in our model, there is a close connection between pharmacists' attitudes, knowledge and skills with pharmacy education.

The role of pharmacy education

As described earlier, pharmacy educators are in a unique position to influence a shift from a product-centered focus to a patient-centered role that involves clinical knowledge and skills.²⁴ According to the Accreditation Council for Pharmacy Education in the United States and the Australian Pharmacy Council for Accreditation of Pharmacy, the balance between, and integration of, physical, chemical, biological, applied pharmaceutical, social, and clinical sciences in pharmacy programs followed by supervised practice are required to facilitate the achievement of professional competencies for patient-centered care practice.^{25,36,37} As a result of these curricula, community pharmacists in the United States and Australia have been shown to deliver clinical interventions in pharmaceutical care programs and contribute to continuity of care.³⁸ In Indonesia, the core curriculum for a 4-year undergraduate program predominantly consists of basic and pharmaceutical sciences, with lack of social, behavioural and clinical sciences.³⁹ The latter group of sciences are taught at the professional program in conjunction with the commencement of a 1-year professional program.^{40,41} The lack of clinically oriented learning and practice represents a key barrier to providing patient-centered practice. Some authors have argued that barriers were derived from a lack of skilled clinical pharmacists to develop an effective pharmacy curriculum and supervise clinical placements where students may practice clinical aspects of pharmacy as well as poor pharmacy practice settings.^{42,43} Moreover, a strategy to redesign pharmacy curricula might be hindered by "the mentality among pharmacy educators themselves, which still perceive pharmacy as only a 'formulation and chemistry' based subject".⁴⁴

Employment opportunities for pharmacy graduates and recognition of clinical pharmacy services should also be taken into consideration when planning to redesign the pharmacy curriculum. Because LMICs generally still encounter issues such as quality, safety, efficacy and distribution of medicines, the clinical pharmacy movement is lacking serious attention.⁴² However, bearing in mind the large number of pharmacists now available in Indonesia with a growth rate of 4,000 new graduates per year⁴⁵ and a higher proportion of apotek and Puskesmas than hospitals, pharmacy industries and pharmaceutical distributors⁴⁶, there is a real opportunity for the pharmacist to become an active participant of the health care workforce in the prevention, treatment and care of chronic diseases in primary health care facilities. Therefore, as illustrated in our model, there is a need to prepare a highly-skilled workforce, supported with government regulations.

Pharmaceutical care practice standards

Although the DOH has endorsed pharmaceutical services guidelines in Puskesmas and standards in apotek^{17,18}, there was limited awareness of these among practitioners. Moreover, pharmaceutical care or clinical pharmacy activities described in these guidelines and standards, as well as in the recent standards^{19,20} are primarily medicine-focused services such as compounding and dispensing prescription medicines, provision of medicine information, and monitoring the use of medicines. In the area of CVD, although two pharmaceutical care pocket books have included monitoring patients' clinical parameters as part of pharmacists' activities in both community and hospital settings^{21,22}, the pharmaceutical care pocket book for caring for patients with coronary heart disease has defined community pharmacists' support as "medicine consultation services".²³

Because of confusion arising from a misunderstanding of the philosophies underpinning clinical pharmacy and pharmaceutical care^{42,47} and discrepancies among standards for pharmacists, practitioners might find it difficult to implement pharmaceutical care. Therefore, referring to our model, to strengthen the pharmacist's position within the health system, not only do pharmacists need to stand on the 'pillar' of pharmacy institutions, but they also require another 'pillar' from pharmacy associations to provide standards, guidelines and leadership, supported by the government. Moreover, the two 'pillars' need to collaborate to enhance professional development.

Work environment

Several respondents in this study perceived that because of their heavy administrative workload and lack of resources in the primary health facilities, the pharmacist has limited ability to support CVD management. Because Puskesmas has been designed to provide basic health care services and resources required for continuity of care are not available in the primary health care setting in LMICs, health care providers might struggle to deliver optimal care.^{4,30}

Similar to situations in other LMICs^{48,49}, low attendance of pharmacists employed in privately owned apotek because of low salaries was seen as a major barrier to provision of patient care services. Despite the existence of concepts promoted by Indonesian pharmacy associations to make pharmacists present at the time of dispensing, they have not had an impact in the real world.¹² Some believe that this is because of the fact that current regulation allows nonpharmacists to own an apotek. However, it should be noted that in some countries where pharmacy ownership is not limited to pharmacists, pharmacists are always in attendance because of the policies which require the pharmacist to be present in the pharmacy to deliver professional services and are well enforced.^{50,51} Therefore, in agreement with previous research¹², we propose in our model that both regulation and enforcement are critical to improving the quality of health care services.

Government policies

Under the decentralized health system, the DKK carries responsibility for registration, licensing, supervising and monitoring both public and private health care providers. In licensing pharmacists, the requirements vary across districts. Meanwhile, licenses for apotek are issued at the provincial level. Because there is little coordination among health offices at district, provincial and central levels as well as between health offices and pharmacy associations, health officials have found it difficult to enforce national regulations related to the profession.¹² Other reported challenges relate to inadequate staffing at the district level to monitor the quality of health care professionals and little local or central government interest in enforcing the regulations.¹²

Use of multiple pharmacies by patients also impedes the provision of continuity of care for chronic conditions. It should be noted that only 48% of Indonesians are covered by health insurance and approximately 30% of all health expenditure is out-of-pocket payments, primarily for finance medicine costs, which are high compared to international standards.^{12,52}

UHC has been implemented since January 2014 to help reduce the out-of-pocket health expenditure and improve access to health care services in Indonesia. There is now, more than ever, an urgent need to define roles and functions of the health workforce.⁵³ Our respondents also expected that such a strategy might enhance the management of health-system delivery for continuity of care. However, looking at the Presidential Regulation 12/2013 on health insurance⁵⁴, the pharmacists' role as a health care professional is not yet recognized and the payment system for pharmaceutical services is still based on the price of medicines. The pharmacist might find it hard to offer patient-centered care practice without structured programs and specific remuneration for professional services²⁹, and ultimately only provide the most basic support: dispensing and counseling on medicines.

Regarding CVD prevention and management, there was a view that little priority has been given to this because the country's major concerns remain focused on tackling communicable diseases. In fact, Indonesian health programs with technical support and funding from the WHO and the two largest grant providers (USAID and AusAID) focus on infectious diseases such as TB and HIV/AIDS.⁵³ It is, of course, problematic because health-system components in LMICs have not been designed for control and treatment of chronic noncommunicable diseases.^{30,55} Therefore, our model illustrates the need for a strong health-system foundation and national commitment in dealing with chronic diseases.

Limitations

Because of the qualitative nature of the study, we must interpret these findings with caution because the data were collected from a particular cohort of pharmacists who had close connection with a Faculty of Pharmacy and had experience in

precepting pharmacy students in East Java Province. Under decentralization, regulations for, and practice of, pharmacists might vary across local governments, so that we might not generalise the results of this study to the whole primary care pharmacist population in Indonesia. However, the application of a maximum variation sampling approach allowed us to generate data from pharmacists who are likely to represent Indonesian pharmacists in the primary health care setting.

Another limitation is that there were only five Puskesmas pharmacists who participated in the study. Despite this, data saturation was reached because of the homogeneity of services and factors influencing service provision in Puskesmas. In addition, although grounded-theory research normally involves observations, only a few observations were conducted in this study because the majority of interviews did not take place in respondents' pharmacy in order to assure confidentiality and independence of the research and allow the respondents to feel comfortable in discussing their true views and experiences.

CONCLUSIONS

Management of chronic noncommunicable diseases in the LMIC primary health care setting required innovative solutions and maximal use of existing resources in health care. As evidenced in the literature, harnessing the untapped potential of pharmacists in supporting chronic disease management offers promise. As illustrated in our model, there is a need for synchronization through systematic coordination between pharmacy educators, pharmacy owners, professional associations, the government, and other stakeholders to improve the contribution of pharmacists in health care services. Lacking such coordination has led to poor pharmaceutical care practice, which might result in a failure of continuity of care in the chronic disease management.

This research has thrown up many issues in need of further investigation, including development of practical approaches to increase awareness of pharmacists and stakeholders about the changing face of pharmacy, viable strategies to prepare pharmacy educators with clinical knowledge and skills, effective methods to increase the level of involvement of professional associations in developing pharmaceutical care practice and monitoring the quality of pharmacists' practice, and determination of the types of pharmacy workforce required to meet the country's needs. Finally, innovation is needed to reinforce national commitment to strengthening the Indonesian health care system in the area of chronic noncommunicable disease prevention, treatment and care.

ACKNOWLEDGEMENTS

We acknowledge the Intern Training Program Unit at Airlangga University Faculty of Pharmacy and the Indonesian Pharmacists Association, Community Pharmacist Special Interest Group, East Java Province Branch for their support. We also thank

participating pharmacists for their involvement in the study.

CONFLICT OF INTEREST

The authors have declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Disclaimers: We acknowledge that all views expressed in this article are our own and not an official position of the institution.

Funding: The authors received no financial support for the research, authorship, and/or publication of this article.

RETOS EN EL MANEJO DE ENFERMEDADES CRÓNICAS NO DECLARABLES POR LOS FARMACÉUTICOS COMUNITARIOS INDONESIOS

RESUMEN

Objetivos: Exploramos los factores que influyen en el ejercicio de los farmacéuticos de atención primaria indonesios sobre el manejo de enfermedades crónicas no declarables y propusimos un modelo que explica la relación entre los factores.

Métodos: Realizamos entrevistas semi-estructuradas en profundidad a farmacéuticos que trabajan en centros de salud comunitaria (Puskesmas, n=5) y en farmacias comunitarias (apotek, n=15) de la provincia de Java del Este. Entrevistamos a los farmacéuticos participantes usando indonesio bahasa para explorar las barreras y facilitadores para su ejercicio en las enfermedades crónicas no declarables. Grabamos todas las entrevistas, las transcribimos literalmente, las traducimos al inglés y las analizamos usando un abordaje basado en la "grounded theory".

Resultados: Extrajimos cinco temas/factores emergentes: actitudes de los farmacéuticos, entorno Puskesmas/apotek, formación del farmacéutico, asociaciones profesionales farmacéuticas, y gobierno. Los respondientes creían que los farmacéuticos de atención primaria tienen un papel limitado en el manejo de enfermedades crónicas. Un entorno desfavorable y la percepción de que los farmacéuticos tienen conocimientos y habilidades inadecuadas fueron comunicados por muchos como barreras al ejercicio del farmacéutico. La escasez de estándares profesionales, guías, liderazgo y reglamentos gubernamentales emparejados con las bajas expectativas de los farmacéuticos entre pacientes y médicos también contribuían para la falta de involucramiento en el manejo de enfermedades crónicas. En nuestro modelo presentamos la interacción de estos factores.

Conclusión: Las actitudes, conocimiento, habilidades y el entorno laboral de los farmacéuticos parecieron influenciar la contribución de los farmacéuticos en el manejo de las enfermedades crónicas. Para desarrollar el involucramiento de los farmacéuticos en el manejo de enfermedades crónicas se requiere apoyo de los educadores de farmacia, de los propietarios de farmacia, de las asociaciones profesionales y del gobierno. Nuestros hallazgos ensalzan la necesidad de una coordinación sistemática entre farmacéuticos y decisores para mejorar el ejercicio de los farmacéuticos de atención primaria en Indonesia para alcanzar la continuidad de los cuidados.

Palabras clave: Servicios de Farmacia Comunitaria; Práctica Profesional; Actitud del Personal de Salud; Investigación Cualitativa; Indonesia

References

1. World Health Organization. Global health estimates summary tables: projection of death by cause, age and sex, by World Bank income category and WHO region. 2013. Retrieved from: www.who.int/healthinfo/global_burden_disease/projections/en/ (Accessed 15 Sep 2014).
2. World Health Organization. Noncommunicable diseases (NCD) country profiles 2014: Indonesia. 2014. Retrieved from: www.who.int/countries/idn/en (Accessed 24 Sep 2014).
3. Abegunde DO, Mathers C, Adam T, Ortegon M, Strong K. The burden and costs of chronic diseases in low-income and middle-income countries. *Lancet*. 2007;370(9603):1929-1938. doi:10.1016/S0140-6736(07)61696-1
4. Beaglehole R, Epping-Jordan J, Patel V, Chopra M, Ebrahim S, Kidd M, Haines A. Improving the prevention and management of chronic disease in low-income and middle-income countries: a priority for primary health care. *Lancet*. 2008;372(9642):940-949. doi:10.1016/S0140-6736(08)6140-x
5. Wagner E. Chronic disease management: what will it take to improve care for chronic illness? *Eff Clin Pract*. 1998;1(1):2-4.
6. World Health Organization. Revitalizing primary health care. 2008. Retrieved from: <http://www.who.int/management/district/RevitalizingPHC2008SEARO.pdf> (Accessed 15 Sep 2014).
7. World Health Organization. Revitalizing primary health care: country experience Indonesia. 2008. Retrieved from: http://www.searo.who.int/LinkFiles/conference_INO-13-July.pdf (Accessed 15 Jan 2012).
8. Kementerian Kesehatan Republik Indonesia. [The Minister of Health Regulation Number 71 Year 2013 about health services in the national health insurance]. 2013. Jakarta: Kementerian Kesehatan Republik Indonesia.
9. Supardi S, Susyanti AL, Raharni, Herman MJ. [Pharmacist placement policy in community health centers]. *Buletin Penelitian Sistem Kesehatan*. 2012;15(2):133-142. Indonesian.
10. Pemerintah Republik Indonesia. [The Government Regulation Number 51 Year 2009 about pharmaceutical work]. 2009. Jakarta: Pemerintah Republik Indonesia.
11. Heywood P, Choi Y. Health system performance at the district level in Indonesia after decentralization. *BMC Int Health Hum Rights*. 2010;10:3. doi:10.1186/1472-698X-10-3
12. Chee G, Borowitz M, Barraclough A. Private sector health care in Indonesia. Bethesda, MD: Health Systems 20/20 Project, Abt Associates Inc; 2009.
13. Smith F. The quality of private pharmacy services in low and middle-income countries. *Pharm World Sci*. 2009;31(3):351-361. doi:10.1007/s11096-009-9294-z
14. Puspitasari HP, Faturrohman A, Hermansyah A. Do Indonesian community pharmacy workers respond to antibiotics requests appropriately? *Trop Med Int Health*. 2011;16(7):840-846. doi:10.1111/j.1365-3156.2011.02782.x
15. Hermansyah A, Sukorini AI, Setiawan CD, Priyandani Y. The conflicts between professional and non-professional work of community pharmacists in Indonesia. *Pharm Pract (Granada)*. 2012;10(1):33-39.
16. Helper CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm*. 1990;47(3):533-543.
17. Departemen Kesehatan Republik Indonesia. [The Minister of Health Decree Number 1027 Year 2004 about pharmaceutical practice standards in apotek]. 2004. Jakarta: Departemen Kesehatan Republik Indonesia.
18. Departemen Kesehatan Republik Indonesia. [Pharmaceutical practice guidelines in puskesmas]. 2006. Jakarta: Departemen Kesehatan Republik Indonesia.
19. Kementerian Kesehatan Republik Indonesia. [The Minister of Health Regulation Number 30 Year 2014 about pharmaceutical practice standards in puskesmas]. 2014. Jakarta: Kementerian Kesehatan Republik Indonesia.
20. Kementerian Kesehatan Republik Indonesia. [The Minister of Health Regulation Number 35 Year 2014 about pharmaceutical practice standards in apotek]. 2014. Jakarta: Kementerian Kesehatan Republik Indonesia.
21. Departemen Kesehatan Republik Indonesia. [Pharmaceutical care for diabetes mellitus]. 2005. Jakarta: Departemen Kesehatan Republik Indonesia.
22. Departemen Kesehatan Republik Indonesia. [Pharmaceutical care for hypertension]. 2006. Jakarta: Departemen Kesehatan Republik Indonesia.
23. Departemen Kesehatan Republik Indonesia. [Pharmaceutical care for coronary heart disease: focus on acute coronary syndrome]. 2006. Jakarta: Departemen Kesehatan Republik Indonesia.
24. Hagemeyer NE. Transforming the community pharmacy setting: academe's responsibility. *Curr Pharm Teach Learn*. 2010;2(3):133-137. doi:10.1016/j.cptl.2010.04.002
25. Nemire RE, Meyer SM. Educating students for practice: educational outcomes and community experience. *Am J Pharm Educ*. 2006;70(1):20.
26. Birks M, Mills J. Grounded theory a practical guide. 2011. London: Sage Publications.
27. Creswell JW. Qualitative inquiry and research design: choosing among five approaches. Thousand Oaks, CA: Sage Publications; 2013.
28. Puspitasari HP, Aslani P, Krass I. Australian community pharmacists' awareness and practice in supporting secondary prevention of cardiovascular disease. *Int J Clin Pharm*. 2013;35(6):1218-28. doi:10.1007/s11096-013-9854-0
29. Puspitasari HP, Aslani P, Krass I. Challenges in the care of clients with established cardiovascular disease: lessons learned from Australian community pharmacists. *PLoS ONE*. 2014;9(11):e113337. doi:10.1371/journal.pone.0113337
30. Samb B, Desai N, Nishtar S, Mendis S, Bekedam H, Wright A, Hsu J, Martiniuk A, Celletti F, Patel K, Adshead F, McKee M, Evans T, Alwan A, Carissa E. Prevention and management of chronic disease: a litmus test for health-

- systems strengthening in low-income and middle-income countries. *Lancet*. 2010;376(9754):1785-1797. doi:10.1016/s0140-6736(10)61353-0
31. Azhar S, Hassali MA, Ibrahim MIM, Ahmad M, Masood I, Shafie K. The role of pharmacists in developing countries: the current scenario in Pakistan. *Hum Resour Health*. 2009;7:54. doi:10.1186/1478-4491-7-54
 32. Basak SC, Foppe van Mil JW, Sathyanarayana D. The changing roles of pharmacists in community pharmacies: perception of reality in India. *Pharm World Sci*. 2009;31(6):612-618. doi:10.1007/s11096-009-9307-y
 33. Bereznicki B, Peterson G, Jackson S, Haydn Walters E, DeBoos I, Hintz P. Perceived feasibility of a community pharmacy-based asthma intervention: a qualitative follow-up study. *J Clin Pharm Ther*. 2011;36(3):348-355. doi:10.1111/j.1365-2710.2010.01187.x
 34. Bryant LJM, Coster G, Gamble GD, McCormick RN. General practitioners' and pharmacists' perceptions of the role of community pharmacists in delivering clinical services. *Res Social Adm Pharm*. 2009;5(4):347-362. doi:10.1016/j.sapharm.2009.01.002
 35. Mak VSL, Clark A, Poulsen JH, Udengaard KU, Gilbert AL. Pharmacists' awareness of Australia's health care reforms and their beliefs and attitudes about their current and future roles. *Int J Pharm Pract*. 2012;20(1):33-40. doi:10.1111/j.2042-7174.2011.00160.x
 36. Marriot JL, Nation RL, Roller L, Costelloe M, Galbraith K, Stewart P, Charman WN. Pharmacy education in the context of Australian practice. *Am J Pharm Educ*. 2008;72(6):131.
 37. Health Workforce Australia. Clinical training profile: pharmacy. 2014. Canberra: Health Workforce Australia.
 38. Ellitt GR, Brien JE, Aslani P, Chen TF. Quality patient care and pharmacists' role in its continuity – a systematic review. *Ann Pharmacother*. 2009;43(4):677-691. doi:10.1345/aph.1L505
 39. Asosiasi Pendidikan Tinggi Farmasi Indonesia. [Core curriculum for bachelor of pharmacy education program]. 2008. Retrieved from: <http://aptfi.or.id/files/kurikulum-inti-program-pendidikan-sarjana-farmasi.pdf> (Accessed 19 Sep 2014).
 40. Asosiasi Pendidikan Tinggi Farmasi Indonesia. [Curriculum for pharmacist education program]. 2008. Retrieved from: <http://aptfi.or.id/files/Kurikulum%20Program%20Pendidikan%20Apoteker.pdf> (Accessed 19 Sep 2014).
 41. Asosiasi Pendidikan Tinggi Farmasi Indonesia. [Standards for intern pharmacist professional practice]. 2010. Retrieved from: <http://aptfi.or.id/files/SPKPA.pdf> (Accessed 19 Sep 2014).
 42. Babar Z, Scahill SL, Akhlaq M, Garg S. A bibliometric review of pharmacy education literature in the context of low- to middle-income countries. *Curr Pharm Teach Learn*. 2013;5(3):218-232. doi:10.1016/j.cptl.2013.01.001
 43. Khan TM. Critical considerations in pharmacy curriculum development in South Asian and Southeast Asian developing nations. *Am J Pharm Educ*. 2010;74(9):176.
 44. Hassali MA. Challenges and future directions for public health pharmacy education in developing countries. *Am J Pharm Educ*. 2011;75(10):95. doi: 10.5688/ajpe7510195
 45. Pramudiarja U. [Pharmacists are abundant but measly for puskesmas]. 2011. Retrieved from: <http://health.detik.com/read/2011/08/22/110159/1708053/763/apoteker-berlimpah-tapi-yang-kerja-di-puskesmas-sangat-sedikit> (Accessed 12 Sep 2014). Indonesian.
 46. Kementerian Kesehatan Republik Indonesia. [Indonesia's health profile 2013]. 2014. Jakarta: Kementerian Kesehatan Republik Indonesia.
 47. Helper CD. Clinical pharmacy, pharmaceutical care, and the quality of drug therapy. *Pharmacotherapy*. 2004;24(11):1491-1498.
 48. Basak SC, Sathyanarayana D. Pharmacy education in India. *Am J Pharm Educ*. 2010;74(4):68.
 49. Vo T, Bedouch P, Nguyen T, Nguyen T, Hoang T, Calop J. Pharmacy education in Vietnam. *Am J Pharm Educ*. 2013;77(6):114. doi: 10.5688/ajpe776114
 50. Lluch M, Kanavos P. Impact of regulation of community pharmacies on efficiency, access and equity: evidence from the UK and Spain. *Health Policy*. 2010;95(2-3):245-254. doi:10.1016/j.healthpol.2009.11.002
 51. Noyce PR. Providing patient care through community pharmacies in the UK: policy, practice and research. *Ann Pharmacother*. 2007;41(5):861-868. doi:10.1345/aph.1K015
 52. Tangcharoensathien V, Patcharanarumol W, Ir P, Aljunid SM, Mukti AG, Akkhavong K, Banzon E, Huong DB, Thabrany H, Mills A. Health-financing reforms in southeast Asia: challenges in achieving universal coverage. *Lancet*. 2011;377(9768):863-873. doi:10.1016/S0140-6736(10)61890-9
 53. World Health Organization. Country cooperation strategy at a glance: Indonesia. 2014. Retrieved from: www.who.int/countryfocus/cooperation_strategy/ccsbrief_idn_en.pdf (Accessed 24 Sep 2014).
 54. Pemerintah Republik Indonesia. [The Presidential Regulation Number 12 Year 2013 on health insurance]. 2013. Jakarta: Pemerintah Republik Indonesia.
 55. Dans A, Ng N, Varghese C, Shyong Tai E, Firestone R, Bonita R. The rise of chronic non-communicable diseases in southeast Asia: time for action. *Lancet*. 2011;377(9766):680-689. doi:10.1016/s0140-6736(10)61506-1