



Pharmacy Practice

ISSN: 1885-642X

ISSN: 1886-3655

Centro de Investigaciones y Publicaciones Farmaceuticas

Setiadi, Adji P.; Wibowo, Yosi; Irawati, Sylvi; Setiawan,  
Eko; Presley, Bobby; Gudka, Sajni; Wardhani, Ari S.  
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Pharmacy Practice, vol. 15, no. 4, 1052, 2017, October  
Centro de Investigaciones y Publicaciones Farmaceuticas

DOI: 10.18549/PharmPract.2017.04.1052

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## Original Research

# Indonesian pharmacists' and pharmacy students' attitudes towards collaboration with physicians

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Received (first version): 15-Jun-2017

Accepted: 16-Oct-2017

Published online: 18-Dec-2017

## Abstract

**Background:** Recent implementation of national health coverage and the increasing health burden in Indonesia require health professionals, including pharmacists, to work more collaboratively to improve access and quality of health care. Nevertheless, relatively little is known about Indonesian pharmacists' attitude towards collaboration.

**Objective:** To assess and compare the attitude of Indonesian pharmacy students and pharmacists towards collaboration with physicians.

**Methods:** A survey of 95 pharmacy students (Universitas Surabaya) and 114 pharmacists (public health facilities in East Java) in Indonesia was conducted using the validated questionnaire, Scale of Attitudes Toward Physician-Pharmacist Collaboration (SATP2C), which was translated in Bahasa Indonesia. The questionnaire contained 16 items which were based on a 4-point Likert scale. Descriptive statistics were used to summarise the responses, (i.e., individual scores, factor scores and total scores).

**Results:** Response rates of 97.9% and 65.8% were reported for students and pharmacists, respectively. The mean total score of SATP2C among Indonesian students and pharmacists were 56.53 versus 56.77, respectively; indicating positive attitudes toward collaboration. Further analysis of each item of SATP2C confirmed the positive attitudes in which mean and median scores of  $\geq 3$  were reported for most items in both groups. Significant differences between students and pharmacists were found regarding the following items: (i) 'there are many overlapping areas of responsibility between pharmacists and physicians' (3.28 versus 2.89, respectively;  $p < 0.001$ ), (ii) 'pharmacist should clarify a physician's order' (3.54 versus 3.71, respectively;  $p = 0.046$ ); and (iii) 'physicians should consult with pharmacists about adverse reactions or refractory to drug treatment' (3.60 versus 3.44, respectively;  $p = 0.022$ ).

**Conclusions:** Indonesian pharmacists reported positive attitudes toward collaboration with physicians. Further research is needed to understand other factors contributing in translating those positive attitudes into actual practice, and thus, providing a good foundation for policy makers, researchers and practitioners to support pharmacist-physician collaboration in Indonesia.

## Keywords

Interprofessional Relations; Pharmacists; Students, Pharmacy; Physicians; Attitude of Health Personnel; Surveys and Questionnaires; Validation Studies as Topic; Indonesia

## INTRODUCTION

Indonesia is a major developing country with a population of approximately 240 million.<sup>1</sup> Like most other countries,

Indonesia faces the challenges of an ageing population<sup>2</sup>, such as longevity and an increase in the number of chronic diseases.<sup>3,4</sup> In 2014, the Indonesian Government established the Jaminan Kesehatan Nasional (JKN), a National Health Coverage, to provide a range of affordable healthcare to all Indonesians.<sup>5</sup> The Ministry of Health through its health offices (Dinas Kesehatan) organised the health system into health centres (Puskesmas) and public hospitals; to provide primary and secondary/tertiary healthcare respectively. Within these new health systems, pharmacists can be involved either as regulators (within the Ministry of Health offices) or as practitioners (within health centres or public hospitals).<sup>6,7</sup>

In the past, the role of pharmacists in Indonesia has been mainly focused on manufacturing and supply of medications. However in recent years, this focus has shifted and expanded to include patient care. In 2008, a National Pharmacy Curricula was established to include pharmacotherapy subjects in the pharmacy university degree as a basis for skilling pharmacists to provide patient care.<sup>8,9</sup> In addition, a variety of opportunistic training sessions related to patient care were also offered by professional bodies and educational institutions to already qualified and practising pharmacists. Further in 2009, the Indonesian Government introduced a regulation to provide a basis for pharmacists to expand their practice to patient

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care and provision of drug information.<sup>10</sup> This was followed by the development of professional practice standards in all the various pharmacist practice settings, including health centres and hospitals.<sup>11,12</sup>

The implementation of JKN in light of the increasing health burden and shortages of health professionals in Indonesia has created opportunities for pharmacists to work collaboratively with physicians. The typical concept of interprofessional collaboration involves healthcare professionals from different disciplines working together with patients, families, carers and communities to deliver the highest quality care.<sup>13</sup> Studies worldwide suggested that interprofessional collaboration interventions can improve healthcare processes and patient outcomes.<sup>14</sup> There is evidence that greater collaboration between physicians and pharmacists is effective in improving healthcare outcomes by helping patients achieve therapeutic goals<sup>15-20</sup>, and enhancing medication management.<sup>21-23</sup>

Numerous studies have explored factors contributing to interprofessional collaboration.<sup>24-26</sup> It was suggested that team (health professionals) attitude has been one of significant factors for collaborative practice. Further, studies focusing on attitude of physicians and/or pharmacists towards collaboration reported that pharmacists and pharmacy students generally had a more positive attitude towards collaborative relationships than medical practitioners and medical students.<sup>27-30</sup> While the concept of interprofessional care is still at its infancy in Indonesia, there is no literature or research guiding the pharmacy profession on what pharmacists and pharmacy students think about working in these interprofessional care models. Therefore this preliminary study, the first of its kind in Indonesian setting, sets out to assess and compare the attitudes of pharmacy students and qualified pharmacists about physician-pharmacist collaborative relationships.

## METHODS

### Research design

A self-administered survey of pharmacy students and pharmacists practicing in public health facilities (i.e. health office, community health centre, and public hospital) was conducted to explore their attitudes toward collaborative practice with physicians. Ethics approval for the study was obtained from the Human Research Ethics Committee of Universitas Islam Indonesia (No. 40/Ka.Kom.Et/70/KE/V/2016).

### Setting and sample recruitment

Indonesia is divided administratively into 33 provinces. The province of East Java consists of 38 districts/cities (kabupaten/kota), with Surabaya being its capital city. From each city/district, 3 pharmacists (i.e. 1 pharmacist from health office, 1 pharmacist from health centre, and 1 pharmacist from public hospital) were selected by the Chief of the related City/District Health Office, giving a total sample of 114 pharmacists. In addition, all of the pre-registration pharmacy students (n=95) enrolled in Universitas Surabaya in 2016 were invited to participate in

this study. Pre-registration training is one-year training following undergraduate course (Bachelor of Pharmacy) to become a qualified pharmacist in Indonesia. Pre-registration students were chosen in this study because their training includes actual fieldwork that requires patient care activities and interprofessional collaboration.

### Data Collection

**Questionnaire development:** The validated Scale of Attitudes Toward Physician-Pharmacist Collaboration (SATP<sup>2</sup>C) questionnaire was used<sup>29</sup> because it provided a single psychometrically sound instrument to measure attitudes toward physician-pharmacist collaborative relationships in both practitioners and students of both professions.<sup>29</sup> The questionnaire contained 16 items that should be answered on a 4-point Likert Scale (1=Strongly Disagree, 4=Strongly Agree). A higher score indicates a more positive orientation toward physician-pharmacist collaborative relationships.

The SATP<sup>2</sup>C questionnaire to date had only been written in English. Therefore we had to translate it into Bahasa Indonesia. To re-confirm the validity of the translated questionnaire, we conducted the following process: (i) forward translation to Bahasa Indonesia by investigator (SI) whose first language is Bahasa Indonesia, and a conceptual equivalence check conducted by a bilingual panel; then (ii) back-translation to English by an independent translator in which the back-translation was compared to the original version by a bilingual panel. The process resulted in some minor linguistic changes to the final questionnaire in Bahasa Indonesia, for example: 'detrimental effect' was translated to 'efek membahayakan', then changed to "efek yang membahayakan" in the final version.

**Questionnaire administration:** The SATP<sup>2</sup>C questionnaire (Indonesian version) was administered to all of the 95 pre-registration pharmacy students in Universitas Surabaya during a lecture session in May 2016. The selected 114 practicing pharmacists (i.e., 3 pharmacists per district/city across 38 districts/cities in East Java) were invited in a meeting conducted by East Java Provincial Health Office in Surabaya in 2016; and the same questionnaire was administered to them all before the commencement of the meeting. The purpose and procedures of the study was described in an introductory letter included with the questionnaire, and consents were obtained from those who were willing to participate.

### Data analysis

Statistical analyses were performed using SPSS Statistics version 19. Descriptive statistics were used to summarise pharmacy students' and pharmacists' characteristics and their responses to the SATP<sup>2</sup>C questionnaire (i.e., total score, each item score as well as factor score). Previous factor analytic studies of SATP<sup>2</sup>C questionnaire confirmed two reliable factors ('collaboration and team work' and 'accountability') for pharmacists, and three factors for students ('responsibility and accountability', 'shared authority', and 'interdisciplinary education').<sup>29,31</sup> Total score and factor scores were calculated using Microsoft Excel 2007. Differences in total scores between pharmacy students and practicing pharmacists in this study were examined using Mann-Whitney test, as the normality test

Table 1. Demographic data of the respondents		
Characteristics	Pharmacy students (N=93)	Practicing pharmacists (N=75)
Gender, n (%) <sup>*</sup>		
Male	14 (15.1%)	12 (16.0%)
Female	79 (84.9%)	62 (82.7%)
Age, median (range)	23 (22-32)	34 (26-54)
Years of experience, median (range)	N/A	5 (1-25)
Practice setting, n (%)		
Health centre	N/A	27 (36.0%)
Hospital	N/A	30 (40.0%)
Government health office	N/A	18 (24.0%)
<sup>*</sup> 1 missing response		

(Shapiro-Wilk) failed ( $p < 0.05$ ). The results were considered statistically significant at  $p < 0.05$ . Cronbach's coefficient alpha was calculated to provide evidence in support the internal consistence and reliability of the Indonesian version of SATP<sup>2</sup>C.

## RESULTS

Ninety-three of the 95 pre-registration pharmacy students and 75 of the 114 practicing pharmacists from the public healthcare facilities in Indonesia completed the survey; giving a response rate of 97.9% and 65.8% respectively. Most participants were females, and the median age of the participating students and pharmacists was 23 years and 34 years, respectively. Details of participant demographic characteristics are summarised in Table 1.

The mean SATP<sup>2</sup>C total scores for pharmacy students and pharmacists were 56.53 versus 56.77, respectively (of maximum possible score of 64), indicating positive attitude of both groups towards collaboration (Table 2). The positive attitude of students and pharmacists were also reported for the two collaboration factors of pharmacists ('collaboration and team work' and 'accountability'), and the three factors of students ('responsibility and accountability', 'shared authority', and 'interdisciplinary education'); all of the factor scores were closer to the maximum possible scores (Table 2). The Cronbach's alpha coefficient for all items ( $r = 0.9$ ) and the factors ( $r > 0.7$ ) revealed that the Indonesian version of SATP<sup>2</sup>C was internally consistent.<sup>32</sup>

Further analysis of each item score was shown in Table 3. The mean score for each item ranged from 3.14 to 3.76 for students; and ranged from 2.89 to 3.83 for pharmacists.

Both student and pharmacist groups reported lower scores for item 6 'there are many overlapping areas of responsibility between pharmacists and physicians' (3.28 and 2.89, respectively), and item 9 (a reverse question) 'the primary function of the pharmacist is to fill the physician's prescription without questions' (3.14 and 3.17, respectively).

With regards to the group comparisons, there was no significant difference in the total SATP<sup>2</sup>C scores between student and pharmacist groups ( $p = 0.957$ ). However, analysis of each item score revealed significant differences for the following items: (i) 'many overlapping areas of responsibility between pharmacists and physicians' (item 6), where students reported more positive attitude than pharmacists ( $p < 0.001$ ), (ii) 'pharmacist should clarify a physician's order' (item 12), where pharmacists revealed more positive attitude than students' ( $p = 0.046$ ); and (iii) 'physicians should consult with pharmacists about adverse reactions or refractory to drug treatment' (item 14), where students reported more positive attitude than pharmacists ( $p = 0.022$ ).

## DISCUSSION

In Indonesia, interprofessional collaboration has been encouraged to improve quality of health care services and to support the recent implementation of national health coverage (JKN).<sup>33</sup> The present study provides evidence in supporting that the Indonesian pharmacy students and pharmacists generally have positive perspectives towards physician-pharmacist collaborative practice. The mean SATP<sup>2</sup>C total score for Indonesian pharmacy students and pharmacists (56.53 and 56.77, respectively; of a maximum of 64) were similar to students and pharmacists from studies in the USA (56.3 and 56.6, respectively) and Croatia (56.2 and 53.8, respectively), which used the same questionnaire.<sup>27-29</sup> Even though the pharmacists' clinical role in the USA have been better established and supported over the last decade<sup>29</sup>, it was interesting to see their attitudes towards physician-pharmacist collaboration are similar to those in Indonesia and Croatia. In the current Indonesian health system in which physicians are the primary care providers, this pharmacists' positive attitude would be of importance since pharmacists could be required to initiate interactions with physicians when it comes to collaborative practice.

Although pharmacists and students in this study generally reported positive attitudes, analysis of individual items

Table 2. Total and factor scores for SATP <sup>2</sup> C administered to Indonesian pharmacy students and practicing pharmacists.				
Pharmacy students, mean (SD)		Total score <sup>*</sup>	56.53 (6.21)	p=0.957 <sup>†</sup>
		Factor 1 <sup>‡</sup>	31.84(3.69)	
		Factor 2 <sup>§</sup>	17.56 (2.14)	
		Factor 3 <sup>  </sup>	10.84 (1.32)	
Practicing pharmacists, mean (SD)		Total score <sup>*</sup>	56.77 (4.95)	
		Factor 1 <sup>  </sup>	25.19 (2.58)	
		Factor 2 <sup>**</sup>	17.99 (1.98)	
<sup>*</sup> Total scores from questions 1 to 16 (possible score range: 16-64)				
<sup>†</sup> <i>Mann-Whitney test</i> of pharmacists' versus students' total scores				
<sup>‡</sup> 'Responsibility and accountability' consists of questions 1, 2, 4, 5, 6, 7, 8, 10, 11 (possible score range: 9-36)				
<sup>§</sup> 'Shared authority' consists of questions 9, 12, 13, 14, 15 (possible score range: 5-20)				
<sup>  </sup> 'Interdisciplinary education' consists of questions 3, 13, 16 (possible score range: 3-12)				
<sup>  </sup> 'Collaboration and teamwork' consists of questions 3, 4, 7, 13, 14, 15, 16 (possible score range: 7-28)				
<sup>**</sup> 'Accountability' consists of questions questions 2, 5, 7, 8, 11 (possible score range: 5-20)				

Table 3. Item scores for SATP<sup>2</sup>C administered to Indonesian pharmacy students and practicing pharmacists

Item <sup>*,†</sup>	Pharmacy students (N=93)			Practicing pharmacists (N=75)			p-value <sup>‡</sup>
	Median	Mean	SD	Median	Mean	SD	
1. A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior	4	3.76	0.50	4	3.83	0.38	0.481
2. Pharmacists are qualified to assess and respond to patients' drug treatment needs	4	3.56	0.56	4	3.54	0.50	0.651
3. During their education, pharmacy and medical students should be involved in teamwork in order to understand their respective roles	4	3.57	0.56	4	3.67	0.47	0.296
4. Pharmacists can contribute to decisions regarding drug interactions that can affect the patients	4	3.56	0.56	4	3.69	0.46	0.123
5. Pharmacists should be accountable to patients for the drug they provide	4	3.53	0.58	4	3.64	0.48	0.248
6. There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of patients	3	3.28	0.61	3	2.89	0.67	<b>&lt;0.001<sup>‡</sup></b>
7. Pharmacists have special expertise in counseling patients on drug treatment	4	3.58	0.56	4	3.65	0.48	0.467
8. Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to the patients	4	3.49	0.56	4	3.60	0.57	0.161
9. The primary function of the pharmacist is to fill the physician's prescription without question <sup>§</sup>	3	3.14	0.67	3	3.17	0.72	0.575
10. Pharmacists should be involved in making drug policy decisions concerning the hospital/pharmacy services upon which their work depends	4	3.54	0.56	4	3.65	0.48	0.200
11. Pharmacists as well as physicians should have responsibility for monitoring the effects of drugs on the patients	4	3.54	0.56	4	3.60	0.49	0.558
12. Pharmacists should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient	4	3.54	0.56	4	3.71	0.46	<b>0.046<sup>‡</sup></b>
13. Physicians and pharmacists should be educated to establish collaborative relationships	4	3.71	0.54	4	3.69	0.46	0.549
14. Physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment	4	3.60	0.55	3	3.44	0.50	<b>0.022<sup>‡</sup></b>
15. Physicians should be made aware that pharmacists can help in providing the right drug treatment	4	3.57	0.56	3	3.47	0.50	0.126
16. Interprofessional relationships between physicians and pharmacists should be included in their professional education programs	4	3.56	0.58	4	3.62	0.49	0.617
Abbreviations: SD, standard deviation							
*These were the original SATP <sup>2</sup> C questions; this study used the translated version (Bahasa Indonesia)							
†Responses based on a 4-point Likert scale: 1= strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree							
‡Significant difference using <i>Mann-Whitney test</i> , p <0.05							
§Reverse question							

reported that both groups have had lower scores for perspectives towards 'many overlapping areas of responsibility between pharmacists and physicians' (item 6), with pharmacists scored lower than students. It should be noted that the majority of the practicing pharmacists (>50%) were under the old curricula; as the new pharmacy curricula in 2008 has prepared students with clinical skills<sup>8,9</sup>, students seemed to have a slightly better understanding toward the overlapping roles between the two professions. A previous Indonesian study suggested that interprofessional learning activities can improve understanding on the roles, responsibility and limitations of other health professionals, as well as gained teamwork and communication experiences during the activity.<sup>34</sup> Thus, further integration of aspects of interprofessional learning in the current pharmacy curricula as well as continuing professional development (CPD) programs should be considered for students and pharmacists to improve understanding on their own professional identity as well as of other professional's role.

In addition to role understanding, the difference in students and pharmacists' attitudes could be around students being more theoretical and ideology driven, while pharmacists' attitude could be more realistic, especially around these results: 'pharmacists should clarify a physician's order' (item 12), where pharmacists revealed

more positive attitude than students; and 'physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment' (item 14), where students reported more positive attitude than pharmacists. In light of the current model of practice in Indonesia where physicians have a higher level of hierarchy<sup>25,35</sup>, pharmacists might consider that it would be more reasonable for them to initiate the interactions through clarifying the physician's order (reactive advice). On the other hand, the new pharmacy curricula in 2008 has included pharmacotherapy subject to prepare students with clinical skills<sup>8,9</sup>, thus students might assume a bigger clinical role where pharmacists and physicians involve in two-way interactions (prospective advice), such as discussing adverse reactions or optimising patient drug treatment.

The overall positive attitudes of pharmacists and students reported in this study should provide a basis to move the profession towards collaborative practice. A recent finding from focus group discussions involving pharmacists/pharmacy technicians, physicians, and nurses in Indonesian community centres, however, reported hierarchical perceptions – where physicians are at top of that hierarchy – and lack of understanding toward pharmacists' role<sup>25</sup>; all of which may hamper in translating those pharmacists' positive attitude into collaborative



actions. The International Pharmacy Federation (FIP) have recommended creating systems that ensure pharmacists' ongoing competence (e.g. registration or accreditation, audit and monitoring); and support from other health professionals should be essential prerequisites when it comes to developing interdisciplinary and collaborative pharmacy practice.<sup>36</sup>

This is the first study assessing the attitudes of Indonesian students and pharmacists using SATP<sup>2</sup>C in which the translated validated SATP<sup>2</sup>C survey has showed internal consistency for the setting. The use of single institution research (for pharmacy students) and the purposeful sampling method (for pharmacists practicing in public health facilities) in this study might provide some limitations in generalising the findings. However, the Faculty of Pharmacy, Universitas Surabaya applied the national pharmacy curricula<sup>8,9</sup>; thus differences of curricula among pharmacy faculties in Indonesia should be minimal. The faculty also has a range of students from across the country, and this present study reported a response rate of almost 100%. Due to the confidentiality of the data of pharmacists practicing in public health facilities, the purposeful sampling was considered the only feasible manner by which it could be conducted. Three pharmacists, however, were selected by the Chief of Health Office in each district/city across East Java to cover a wide range of practice settings (i.e., included all district/city in East Java and all type of public health facilities). The characteristics of pharmacists in this study compared well with respect to gender and age data of prior studies of practicing pharmacists in Surabaya and Jakarta, Indonesia.<sup>37,38</sup> Hence, although the pharmacist sample is not random and the student sample is from single institution in which the risk of response bias might limit the generalisation, the views of participants may give some insight into the attitudes of Indonesian pharmacists and students towards collaborative practice.

## CONCLUSIONS

Indonesian pharmacy students and practicing pharmacists in this study reported positive attitudes towards collaborative practices with physicians. It is desirable that interprofessional learning and supports should target students' and pharmacists' understanding on their professional responsibility and pharmacists' attitudes towards expanded clinical roles in teamwork with physicians. Further research is needed to explore attitudes of physicians and medical students as the primary health providers toward collaborative practice with pharmacists within Indonesian context.

## ACKNOWLEDGEMENT

The authors would like to thank students and pharmacists who participated in the survey, as well as staff from the Centre for Medicine Information and Pharmaceutical Care (CMIPC), Faculty of Pharmacy, Universitas Surabaya and East Java Provincial Health Office, Ministry of Health – Republic of Indonesia, for assisting in the data collection.

## CONFLICT OF INTEREST

This study was conducted as part of the East Java Provincial Health Office programs in promoting the roles of pharmacists. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

## FUNDING

None.

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