

## RESEARCH ARTICLE

# Impact of Smoking Cessation Training for Community Pharmacists in Indonesia

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### Abstract

**Background:** Community pharmacists play an important role in tobacco control and adequate training on smoking cessation is essential. **Materials and Methods:** A quasi-experimental pre-test/post-test design was used. A one-day workshop on smoking cessation organized by Indonesian Pharmacists Association as part of PCE program was offered to 133 community pharmacists. The workshop consisted of a 3-hour lecture and a 3-hour role-play session. Pre-training and post-training surveys assessed the impact of training on parameters including knowledge, perceived role and self-efficacy with respect to smoking cessation counseling practices. Intention and ability to perform counseling using the 5A framework was assessed after training only. **Results:** After PCE, knowledge score significantly increased from  $24.9 \pm 2.58$  to  $35.7 \pm 3.54$  ( $p < 0.001$ ). Perceived role and self-efficacy in smoking cessation counseling also significantly increased from  $25.8 \pm 2.73$  to  $28.7 \pm 2.24$ , and  $27.6 \pm 4.44$  to  $32.6 \pm 3.63$ , respectively ( $p < 0.001$ ). After the workshop, most participants were willing to ask, advise, and assess patients who ready to quit, but were still less likely to assist in quitting plans and arranging follow up counseling. More than 75% pharmacists were able to perform cessation counseling and 65% of them can completely perform a 5A brief intervention. **Conclusions:** PCE can enhance pharmacists' knowledge, perceived role, self-efficacy in cessation counseling practices, and create willingness and ability to perform cessation counseling. Future training is recommended to improve skills in assisting quitting plans and arranging follow up.

**Keywords:** Continuing education - counseling - Indonesian pharmacists - smoking cessation

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### Introduction

Tobacco remains the preventable cause of deaths and disability worldwide. Tobacco smoking is a major risk factor for several diseases including cancers (Wong et al., 2010; Rao et al., 2013). Smoking causes many types of cancer such as cancer of the lung, esophagus, larynx, mouth, throat, kidney, bladder, pancreas, stomach, and cervix, as well as acute myeloid leukemia (U.S. Department of Health and Human Services, 2010). In fact, tobacco is the single biggest avoidable cause of cancer in the world (Swerdlow et al., 2010). Evidence consistently indicated that stopping smoking can substantially reduce the risk of smoking-related cancer (International Agency for Research on Cancer (IARC, 2004). More importantly, it was found that offering assistance in quitting has been proven as one of the most effective strategies to tackle tobacco problems (Wong et al., 2010; Beaglehole et al., 2011).

To tackle serious health problems attributable to smoking, all health care providers are encouraged to actively involved in smoking cessation services (Hudmon

and Corelli, 2009; Oberoi et al., 2014). Community pharmacists are well-positioned to provide smoking cessation services as, in most countries smoking cessation products can be bought without prescription. Previous studies indicated that pharmacist intervention was associated with higher tobacco cessation rate (Dent et al., 2007; Saba et al., 2014b). Like other professionals (Ficarra et al., 2010; Binnal et al., 2012; Panda et al., 2013), pharmacists have positive attitude in providing smoking cessation services (Goniewicz et al., 2010; El Hajj et al., 2012). Nevertheless, pharmacists' involvement in treating tobacco use, particularly that of community pharmacists, remains low (El Hajj et al., 2012) because of a number of barriers including lack of time, knowledge and confidence in providing smoking cessation intervention (Goniewicz et al., 2010; El Hajj et al., 2012). This indicated that training on smoking cessation counseling is essential.

Indonesia ranked fourth in the world for prevalence of smoking (Eriksen et al., 2014). At present, the tobacco-related education has recently be successfully developed and introduced in only one pharmacy school in Indonesia (Kristina et al., 2014). As, the role of pharmacists in

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providing cessation counseling was encouraged by several professional organizations, the PCE should be expanded to address content and skill areas for this issue (Schindel et al., 2012). In October 2013, Indonesian Pharmacists Association (IPA) firstly offered pharmacist continuing education (PCE) on smoking cessation for community pharmacists in Yogyakarta, Indonesia. The purpose of this study was to assess the effectiveness of PCE on smoking cessation in term of knowledge, perceived role, self-efficacy, intention and ability to perform cessation counseling.

## Materials and Methods

### Development of PCE

PCE in smoking cessation was designed as one-day workshop. The workshop consists of 3-hour class lecture and 3-hour role play session, followed by evaluation assessment which was held in second day after the workshop. The PCE focus on providing basic knowledge on health consequences of smoking and benefits of quitting (module 1), pharmacology of nicotine addiction (module 2), smoking cessation treatments and drug interactions (module 3), introducing pharmacists' role in smoking cessation (module 4), and encouraging pharmacists' to provide 5As for smoking cessation, as details elsewhere (Kristina SA et al., 2014). 5A's brief intervention consisted of 5 domains i.e. ask whether patient smokes, advise patients to quit, assess readiness to quit, assisting quitting by facilitating quit process and discuss key issues related to quit, and arrange follow up counseling. Evidence reveals that 5A's brief intervention can significantly increase quit rate among smokers.

### Participants and study process

Invitation to participate in PCE in smoking cessation was announced to the community pharmacists in Yogyakarta, 3 months before event's date (October 4-5, 2013) via Indonesian Pharmacists Association (IPA)'s district representatives. Participation was voluntary. After PCE accomplishment, 12 credits of PCE participatory were granted to participants through the Gadjah Mada University in collaboration with IPA. The protocol of this study and survey instruments were approved by the Medical and Health Research Ethics Committee (MHREC) at Gadjah Mada University, approval number KE/FK/509/EC.

### Measures

A quasi experimental pretest-posttest design was used.

During the pretest and posttest, knowledge regarding smoking and smoking cessation (42 yes/no questions), perceived role regarding the contribution in smoking cessation (8 statements with 4-point likert scale, from strongly agree to strongly disagree), and self-efficacy in providing smoking cessation counseling (10 statements with 4-point likert scale, from strongly agree to strongly disagree) were examined. More score in each part indicates higher knowledge, more accepting role and more confident. In addition, intention to provide cessation counseling (6 statements) was examined during the posttest using 4-point likert scale (ranged from strongly disagree to strongly disagree). Ability to perform cessation counseling was assessed by 9 criteria of 5A's (yes/no statements). Participants who can perform the first 3A's (Ask, Advise, and Assess) in appropriate order were classified as performing cessation counseling. On the other hand, those who can perform all 5A's (Ask, Advise, Assess, Assist, and Arrange) in appropriate order were classified as completely perform 5A's brief intervention.

### Analysis

Descriptive statistics were used to characterize the study population. Mc Nemar test and Wilcoxon sign rank test was used for examining differences between the pre and post survey responses.

## Results

### Study population and characteristics

One hundred thirty three pharmacists throughout Yogyakarta province participated in PCE program. Of 133 participants, 133 completed pre survey and 128 completed post survey. After data matching between pre and post survey, 127 data (95% response rate) were analyzed. Most of the participants were women (95.3%), aged between 25 to 40 years old (81.1%). Most participants were of Yogyakarta, Sleman, and Bantul district origin (89%) Most of the participants have less than 10 years working

**Table 1. Knowledge, Perceived Role, and Self-efficacy Towards Smoking Cessation Counseling**

Assessment	Pre-test scores, Mean (SD)	Post-test scores, Mean (SD)	P value
Knowledge *	24.8 (2.58)	35.7 (3.54)	<0.001
Perceived role**	25.8 (2.73)	28.7 (2.24)	<0.001
Self-efficacy***	27.6 (4.44)	32.6 (3.63)	<0.001

\*range=0-42, higher score represents higher knowledge; \*\*range= 8-32, higher score represents higher perceived role; \*\*\*range= 10-40, higher score represents higher self-efficacy

**Table 2. Knowledge Regarding Smoking and Smoking Cessation by Mod**

Modules	Pre-test scores, Mean (SD)	Post-test scores, Mean (SD)	Δ pre-post, Mean (SD)	P value
Module 1. Epidemiology of tobacco use*	3.79 (1.27)	6.15 (0.80)	2.35 (1.29)	< 0.001
Module 2. Nicotine pharmacology and principle of addiction**	4.62 (0.95)	6.00 (0.94)	1.39 (1.38)	< 0.001
Module 3. Smoking therapies and drug interaction***	5.88 (1.51)	10.9 (1.97)	5.02 (2.47)	< 0.001
Module 4. Smoking cessation intervention methods****	10.5 (0.94)	12.5 (1.18)	2.03 (1.42)	< 0.001

\*range= 0-7, higher score represents higher knowledge in module epidemiology of tobacco use; \*\*range=0-7, higher score represents higher knowledge in Module Nicotine pharmacology and principle of addiction; \*\*\*range=0-14, higher score represents higher knowledge in module smoking therapies and drug interaction; \*\*\*\*range=0-14, higher score represents higher knowledge in module smoking cessation intervention methods

experiences in community pharmacy (72.6%). However, most of the participants (66.2%) practice face-to-face counseling approximately 4 to 8 hours per week. Almost all of the participants did not receive smoking cessation training before (96.1%), however most of them were willing to provide cessation counseling after receiving the training (92.9%).

#### Knowledge regarding smoking and smoking cessation

Before the PCE, the mean±SD of total knowledge was 24.8±2.58 while after completing the training the mean of total knowledge was significantly increased to 35.7±3.54 ( $p<0.001$ ) (Table 1). Knowledge scores were significantly improved in all modules (Table 2).

#### Perceived role regarding contribution in smoking cessation

Before training, the mean±SD total score of perceived

role was 25.8±2.73. In the post-training survey, the mean total score for perceived role was significantly higher than those in the baseline survey, with mean±SD score of 28.7±2.24 ( $p<0.001$ ) (Table 1). For each item of 8 statements, scores were also significantly higher after training ( $p<0.001$ ) (Table 3).

#### Self-efficacy to perform smoking cessation counseling

A significant increase in pharmacists' self-efficacy was found when pre and posttest score was compared (27.6±4.44 vs 32.62±3.63), ( $p<0.001$ ) (Table 1). For each item of 10 statements, scores were also significantly higher after training ( $p<0.001$ ) (Table 4).

#### Intention to provide 5A's counseling

Table 5 delineated intention to provide 5As counseling at post survey after training. Participants mostly stated agree and strongly agree for each domain. All of

**Table 3. Perceived Role in Smoking Cessation**

Statements*	Pretest scores, Mean (SD)	Posttest scores, Mean (SD)	Δ pre-post, Mean (SD)	P value
Pharmacists serve as role models for their patients and the public	3.46 (0.59)	3.94 (0.23)	0.49 (0.60)	< 0.001
Pharmacists have a role in giving advice or information about smoking cessation to patients	3.45 (0.59)	3.87 (0.33)	0.42 (0.61)	< 0.001
Pharmacists should routinely advise their patients who smoke to quit smoking	3.18 (0.52)	3.65 (0.48)	0.47 (0.61)	< 0.001
Pharmacists who smoke were less likely to advise patients to stop smoking	2.89 (0.75)	3.20 (0.82)	0.31 (0.87)	< 0.001
Pharmacists should routinely advise their patients who smoke to quit using other tobacco products	3.01 (0.76)	3.47 (0.66)	0.46 (0.88)	< 0.001
Pharmacists who use other tobacco products were less likely to advise patients to stop smoking	2.84 (0.74)	3.05 (0.74)	0.21 (0.90)	0.015
Patient's chances of quitting smoking increased if a pharmacist advised him/her to quit	3.30 (0.59)	3.63 (0.48)	0.33 (0.67)	< 0.001
Pharmacists should get specific training on cessation technique	3.66 (0.56)	3.86 (0.35)	0.20 (0.56)	< 0.001

\*range= 8-32, higher score represents higher perceived-role

**Table 4. Self-efficacy in Performing Smoking Cessation Counseling**

Statements *	Pretest scores, Mean (SD)	Posttest scores, Mean (SD)	Δ pre-post, Mean (SD)	P value
Know the appropriate question to ask patients when providing counseling	2.87 (0.62)	3.46 (0.53)	0.58 (0.68)	< 0.001
Have the skills needed for counsel	2.75 (0.64)	3.30 (0.55)	0.55 (0.63)	< 0.001
Can provide motivation to patients who are trying to quit	3.01 (0.60)	3.36 (0.53)	0.35 (0.64)	< 0.001
Have sufficient knowledge on the psychology aspect of tobacco cessation	2.53 (0.61)	3.21 (0.54)	0.68 (0.72)	< 0.001
Can create consumer awareness of why pharmacists should ask questions about tobacco use	2.69 (0.62)	3.16 (0.48)	0.47 (0.70)	< 0.001
Know when a referral to a physician is necessary	2.63 (1.75)	3.13 (0.49)	0.50 (1.79)	< 0.001
Can make collaboration with community leaders to increase awareness on quitting	2.64 (0.59)	3.17 (0.50)	0.53 (0.63)	< 0.001
Are able to communicate with physicians and others to help patient quit	2.69 (0.64)	3.18 (0.52)	0.48 (0.65)	< 0.001
Can involve in community events for anti tobacco campaign	2.85 (0.62)	3.27 (0.49)	0.42 (0.68)	< 0.001
Are able to utilize counseling education material such as leaflet and brochure quit smoking	2.97 (0.62)	3.38 (0.49)	0.41 (0.70)	< 0.001

\*range= 10-40, higher score represents higher self-efficacy

**Table 5. Intention to Provide Smoking Cessation Counseling in Practice Site after Training**

Statement*: I am willing to: (n=125)	Strongly disagree n (%)	Disagree n (%)	Agree n (%)	Strongly agree n (%)
Asking patient whether he/she smoke or not.			83 (66.4)	42 (33.6)
Advising patient to quit by informing health consequence of smoking and benefit of quitting.	1 (0.8)	8 (6.4)	86 (68.8)	30 (24)
Motivating patient to quit or consider quitting.	0	18 (14.4)	87 (69.6)	20 (16)
Assisting patient who willing to quit by providing the cessation counseling service.	0	37 (29.6)	70 (56)	18 (14.4)
Arranging follow-up counseling for patient who quit.	5 (4)	47 (37.5)	55 (44)	18 (14.4)
Provide tobacco cessation counseling in practice site.	4 (3.2)	16 (12.8)	72 (57.6)	33 (26.4)

\*range= 6-24, higher score represents higher intention

respondents were willing to ask patients whether they smoked, in comparison to 93% of respondents who were willing to advise to quit, whereas 85% respondents were willing to assess readiness to quit, some 70% respondents were willing to assist patients and a total of 54% were willing to arrange follow up counseling.

Furthermore, 83% respondents were willing to provide cessation counseling service in practice site. It should be noted that respondents were less likely to be involved in assisting quitting and arranging follow up counseling than in the other sections.

#### Ability to perform smoking cessation counseling

After training completion, ability to perform cessation counseling was observed using 5A's checklist. As shown in Table 6, most pharmacists (98.4%) were able to ask, 89% were able to advise, 90% were able to assess. Nevertheless, pharmacists' skill in assisting and arranging follow up were poorer than the first 3A's.

About 60.6% pharmacists were able to discuss quitting methods, 73.2% offered patient to set quit date and 51.2% discussed behavioral coping strategies. Less than half of pharmacists (47.2%) arranged follow up counseling. It was found that 65% pharmacists were able to provide cessation counseling while only 15% of them were able to perform 5A's brief intervention.

**Table 6. Ability to Perform Smoking Cessation Counseling**

Domain	Criteria (n=127)	n (%)
Ask	1. Ask patient whether he/she smokes or not	125 (98.4)
Advise	2. Advise patient about health impacts of smoking (give leaflet if needed)	115 (90.6)
	3. Advise patient to quit smoking personally related to his/her disease	109 (85.8)
Assess	4. Assess tobacco use history (past and current use) and quit efforts in the past	111 (87.4)
	5. Assess readiness to quit within one month	117 (92.1)
Assist	6. Facilitate quit process by discussing intervention methods to quit	77 (60.6)
	7. Set a quit date	93 (73.2)
	8. Discuss key issue of stress related to quit and strategies to relieve withdrawal symptom	95 (51.2)
Arrange	9. Arrange for follow-up contact (next week)	60 (47.2)
	Perform cessation counseling (perform 3A's)	83 (65)
	Completely perform 5A's brief intervention	19 (15)

## Discussion

Significant improvement in pharmacists' knowledge, perceived role, self-efficacy in smoking cessation as well as positive intention and good ability in performing cessation counseling was found after the PCE training. This finding is consistent with other studies in which pharmacists have reported the improved knowledge and skills in providing smoking cessation counseling after training (Martin et al., 2010; Saba et al., 2014a).

In the previous study (Brewster et al., 2005), fewer than half of pharmacists reported that it is important for pharmacists to ask patients if they smoke, assess patients dependence on nicotine, and assess' readiness to quit. In fact, only 14% of pharmacists reported that they asked half of their new patients whether they smoke (Brewster et al., 2005). On the other hand, our study found that after CPE, about 98% of pharmacists were willing to ask, 88% were able to advise, while 90% were able to assess. This findings show the potential of CPE in increasing the pharmacists' involvement on smoking cessation.

However, continuing training on assisting to quit and arranging follow up plan is needed as our results indicated that many pharmacists were unable to assist patients in quitting especially in assisting quit plan (facilitating quit process includes dealing with withdrawal symptoms and other issues related to quit) and to arrange follow up. These findings are in line with other studies which found that health professionals were less likely to perform assisting and arranging follow-up as compared to asking and advising (Tong et al., 2010; Panda et al., 2013).

As alternative, intensive training in "Ask, Advise, Refer (AAR)" would be appropriate in situation of limited resources and lack of time (Shelley and Cantrell, 2010; Paek et al., 2014). According to Shelley and Cantrell (Shelley and Cantrell, 2010), smokers were receptive to receiving proactive AAR counseling at community pharmacies. Therefore, future training might introduce AAR as it might also be useful for Indonesia's real practice situations.

The limitations of this study include: (i) selection bias, as participation on PCE is voluntarily basis therefore our participants are pharmacists who are highly-motivated to perform smoking cessation services, generalizability of the effectiveness of PCE may be made with caution;

(ii) long term effectiveness of PCE in term of clinical outcome including number of patients success to quit as result of receiving smoking cessation counseling was not examined, and (iii) there is no comparison group in our study. Randomized design evaluate the effectiveness of PCE on actual clinical outcome should be further conducted.

Smoking cessation training through pharmacists continuing education program showed positive values in enhancing knowledge as well as self-efficacy to provide smoking cessation counseling. Given the high prevalence of smoking and substantial burden of cancer in Indonesia especially those related to tobacco smoking (Kimman et al., 2012; Zheng et al., 2014), the suitability of pharmacists to provide cessation counseling, and the effectiveness of training, PCE on smoking cessation should be widely and continuously provided to the pharmacists in Indonesia.

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## References

Beaglehole R, Bonita R, Horton R et al (2011). Priority actions for the non-communicable disease crisis. *Lancet*, **377**, 1438-47.

Binnal A, Rajesth G, Denny C, et al (2012). Insights into the tobacco cessation scenario among dental graduates: an Indian perspective. *Asian Pac J Cancer Prev*, **13**, 2611-7.

Brewster J, Ashley M, Laurier C, et al (2005). On the front line of smoking cessation: Education needs of community pharmacists. *Can Pharm J*, **138**, 26-31.

Dent LA, Harris KJ, Noonan CW (2007). Tobacco interventions delivered by pharmacists: A summary and systematic review. *Pharmacotherapy*, **27**, 1040-51.

El Hajj MS, Al Nakeeb RR, Al-Qudah RA (2012). Smoking cessation counseling in Qatar: community pharmacists' attitudes, role perceptions and practices. *Int J Clin Pharm*, **34**, 667-76.

Ficarra MG, Gualano MR, Capizzi S, et al (2010). Tobacco use prevalence, knowledge and attitudes among Italian hospital healthcare professionals. *Eur J Public Health*, 1-6.

Goniewicz ML, Lingas EO, Czogala J, et al (2010). The role of pharmacists in smoking cessation in Poland. *Eval Health Prof*, **33**, 81-95.

Hudmon KS, Corelli KL (2009). ASHP therapeutic position statement on the cessation of tobacco use. *Am J Health-Syst Pharm*, **66**, 291-307.

Kimman M, Norman R, Jan S, et al (2012). The burden of cancer in member countries of the Association of South East Asian Nation (ASEAN). *Asian Pac J Cancer Prev*, **13**, 411-20.

Kristina SA, Thavorncharoensap M, Pongcharoensuk P, et al

(2014). Effectiveness of tobacco education for pharmacy students in Indonesia. *Asian Pac J Cancer Prev*, **15**, 10783-6.

Martin BA, Burkewitz RH, Chewning BA (2010). Effect of a tobacco cessation continuing professional education program on pharmacists' confidence, skills, and practice-change behaviors. *Am J Pharm Assoc*, **50**, 9-16.

Oberoi SS, Sharma G, Nagpal A, et al (2014). Tobacco cessation in India: how can oral health professionals contribute. *Asian Pac J Cancer Prev*, **15**, 2383-91.

Paek Y, Lee S, Kim Y, et al (2014). Effect on smoking quit rate of telling smokers their health risk appraisal in terms of health age: a randomized control trial. *Asian Pac J Cancer Prev*, **15**, 4963-68.

Panda R, Persai D, Mathur M, et al (2013). Perception and practices of physicians in addressing the smokeless tobacco epidemic: Findings from two states in India. *Asian Pac J Cancer Prev*, **14**, 7237-41.

Rao SVK, Mejia G, Roberts-Thomson K, et al (2013). Epidemiology of oral cancer in Asia in the past decade- An update (2000-2012). *Asian Pac J Cancer Prev*, **14**, 5567-77.

Saba M, Diep J, Bittoun R, et al (2014a). Provision of smoking cessation services in Australian community pharmacies: a simulated patient study. *Int J Clin Pharm*, **36**, 604-14.

Saba M, Diep J, Saini B, et al (2014b). Meta-analysis of the effectiveness of smoking cessation interventions in community pharmacy. *J Clin Pharm and Ther*, 1-8.

Schindel TJ, Kehrer JP, Yuksel N, et al (2012). University-based continuing education for pharmacists. *Am J Pharm Educ*, **76**.

Shelley D, Cantrell J (2010). The effect of linking community health centers to a state-level smoker's quitline on rates of cessation assistance. *BMC Health Serv Res*, **10**, 25.

Tong EK, Strouse R, Hall J, et al (2010). National survey of U.S. health professionals' smoking prevalence, cessation practices, and beliefs. *Nicotine Tob Res*, **12**, 724-33.

Wong KY, Seow A, Koh WP, et al (2010). Smoking cessation and lung cancer risks in an Asian population: findings from the Singapore Chinese Health Study. *Br J Cancer*, **103**, 1093-6.

Zheng W, McLerran DF, Rolland BA, et al (2014). Burden of total and cause-specific mortality related to tobacco smoking among adults aged  $\geq 45$  years in Asia: A pooled analysis of 21 cohorts. *Plos Medicine*, **11**.