



## Research Article

**PHARMACIST PERCEPTION TO IMPORTANCE AND SELF-COMPETENCE IN PHARMACY PRACTICE.**Azmi Sarriff<sup>1</sup>, Wasif S Gillani<sup>2</sup>, Ghada Abdel Raheem M. Babiker<sup>3</sup>**Address for Correspondence**<sup>1</sup>Associate Professor, Discipline of Clinical Pharmacy, School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM)<sup>2</sup>Lecturer, Discipline of Clinical Pharmacy, Universiti Sains Malaysia.<sup>3</sup>MSc (Pharmacy Student at time of study), Discipline of clinical Pharmacy, Universiti Sains Malaysia.

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**ABSTRACT**

**OBJECTIVE:** study objective is to evaluate the pharmacists' perception towards the importance of pharmaceutical care in respective practice site and also self-evaluation to determine the competence in managing clinical practices.

**METHODOLOGY:** A questionnaire was designed to explore the pharmacist's understanding, knowledge, and their perceptions on the philosophy of pharmaceutical care and barriers to its provision, and also the current pharmacy practice. The cross-sectional study was conducted, which involved exploring and collecting data from community and hospital pharmacists in the West and East Malaysia (Sabah and Sarawak), employing the self-administered mailed questionnaire approach. Pharmacists recruited by systematic random sampling technique. The data was analyzed using the SPSS® (Statistical Package for the Social Sciences) software program for windows® Version (12.0), and Microsoft Office Excel 2003.

**RESULTS:** Of the 927 questionnaires mailed to the hospital and community pharmacists, 269 were returned back. In terms of the responses from both the hospital and community pharmacists; provide a response rate of 45.8% and 18.5%, respectively. The medians age of the hospital and community pharmacy respondents were found to be 29 and 36 years old, respectively (mean  $31.8 \pm 7.03$  and  $36.8 \pm 8.78$  respectively). It was observed that most of the respondents from the both the hospital and community pharmacy settings tend to be in the younger age group (24-35 years) (77%) and (48.2%) respectively, ( $P < 0.001$ , Chi-square). 2-Proportions Sample test showed highly a significant value of  $p < 0.05$  for these variables when tested to estimate the differences in proportions (EDP). The overall of the community pharmacy respondents for this category of activities were (81%) and this was significantly higher ( $p < 0.05$ ; Chi-Square, 2-sided) than these stated by the hospital pharmacy respondents (60%).

**CONCLUSION:** Hospital pharmacy respondents showed higher perceptions of the importance and competence to the most of the current pharmacy practice activities compared to their counterparts in community pharmacy settings. Whereas less than 50% of community pharmacy respondents indicated that they were competent to practice the dispensing activities and agreed about its importance.

**KEYWORDS:** Pharmaceutical care, Patient-oriented services, community pharmacy, Pharmacist

**INTRODUCTION:**

More recent studies estimate 58.9% (range, 32% to 86%) of drug-related hospital admissions are preventable (Winterstein *et al.*, 2002). Causes of preventable drug-related hospital admissions have included adverse drug reaction, over-dosage and under-dosage, lack of a necessary drug therapy, patient non-adherence, inadequate follow-up, and problem with nonprescription drug (Heelon *et al.*, 2007; Pit *et al.*, 2007; NANS, 2006; Sorensen *et al.*, 2005; Gurwitz *et al.*, 2000; Dartnell *et al.*, 1996; Schneitman-McIntire *et al.*, 1996; Lindley *et al.*, 1992; Bero *et al.*, 1991). In Malaysian context, the drug related

problems have received much attention during the past years. Through this period; several studies had been conducted, using many variables to investigate the existence of different categories of drug-related problems for different disease conditions in different practice settings. One study conducted by Sarriff *et al.*, (1992) in outpatient pharmacy demonstrated that a significant proportion of patients unable to understand prescription instructions, and only 21% of patients were able to comprehend complete antibiotics instructions. The problem of poor patient

adherence has been extensively researched over the years (Aziz *et al.*, 1999; Othman, 1991; Hassan *et al.*, 1990b; Hassan *et al.*, 1990c; Hassan *et al.*, 1989). Other study detected an alarmingly high prevalence of drug related problems on medication prescribed to outpatients with type II diabetes (NIDDM) and hypertension. Since out of 392 prescriptions, DRPs were detected in 272 (69%) of anti-diabetics and 319 (81%) of antihypertensive prescribed (Sadik *et al.*, 2005). The problems of adverse drug reaction reporting have been given more importance lately. Another study was conducted in Malaysia to determine the frequency and types of drug administration errors in a hospital ward found that a total of 1118 administrations were observed in 66 inpatients with 135 drug administration errors recorded. This means 12.1 errors per 100 drug administrations. The most common types of drug administration errors were incorrect time (25.2%), followed by incorrect technique of administration (16.3%). Others included incorrect drug preparation, incorrect dose and omission errors (10.4% each) (Chua *et al.*, 2005; Chua *et al.*, 2003). Yet, very little is known about pharmacists' knowledge on pharmaceutical care in this country. One study in Malaysia involved 282 pharmacists practicing at the outpatient pharmacy of 13 state hospitals, 67 district hospitals, and 7-health clinic in West Malaysia revealed that, knowledge about pharmaceutical care in general is unsatisfactory. Although pharmaceutical care is regarded as, highly important, only 5% of the pharmacists were considered to have adequate knowledge on pharmaceutical care (Othman, 2004). A number of studies have proved the benefit of competent pharmacists providing pharmaceutical care in psychiatry area

(Bryce *et al.*, 2004; Jenkins and Bond, 1996). Other studies aim to investigate the impact of a pharmacist-lead pharmaceutical care program, involving optimization of drug treatment and intensive education and self-monitoring of patients with heart failure (Sadik *et al.*, 2005; McMurray, 1999; Gattis *et al.*, 1999). Li and Kendler, (2004) reported that community pharmacists managed postmenopausal osteoporosis through comprehensive pharmaceutical care. One study revealed the impact of a pharmaceutical care specialist HIV service provided by pharmacists to sample of patient with HIV infections (Gilbert, 2005; Bramble *et al.*, 1999). In a similar context, the profession of pharmacy has a unique opportunity to contribute effectively to gerontological care especially during the past 40 years whereby the elderly population has increase dramatically (Lyra Jr *et al.*, 2007; Grymonpre *et al.*, 2001; Beyth and Shorr, 1999; Stein, 1994). Several studies revealed pharmacists ability to positively affect drug-use management and contribution provides care to pediatric patients (Stergachis *et al.*, 2003; Botha *et al.*, 1992). Our study objective is to evaluate the pharmacists' perception towards the importance of pharmaceutical care in respective practice site and also self-evaluation to determine the competence in managing clinical practices. It also includes the relative effect of socio-demographic on the variance of pharmaceutical care activity within hospital and community pharmacist.

#### **METHODOLOGY:**

##### **Constructions and development of the questionnaire**

A questionnaire was designed to explore the pharmacist's understanding, knowledge, and their perceptions on the philosophy of pharmaceutical care and barriers to its

provision, and also the current pharmacy practice. The initial pool of items was identified by previous studies, an extensive literature review on pharmaceutical care and pharmacy practice, and personal communication with researcher's supervisor. The initial questionnaire consists of ninety items. The main points in constructing the thirty items related to "the understanding of pharmaceutical care, as well as perceived important, competent, and practicality on pharmaceutical care process" were generated from the nine-steps pharmaceutical care process proposed by Strand, Cipolle, and Morley (1992), and also was drawn from concepts that inherent and representative of pharmaceutical care (Hepler and Strand, 1990; Hepler, 1987); five items of these thirty items were adapted from one New Zealand study (Dunlop and Shaw, 2002). Another twenty-two items related to current pharmacy practice was developed from numerous studies (Smith et. al, 1990; Rosenfeld *et al.*, 1987; Smith, 1985). The main points used in constructing the seventeen items related to "barriers to implement pharmaceutical care" scale was drawn from several national and international articles (Rossing, 2001; AphA, 2001; Bell *et al.*, 1998; Campbell and Saulie, 1998; Odedina *et al.*, 1995; Sarriff, 1994; May, 1993; Swift, 1993; Louie and Robertson, 1993; Hassan, 1990a). The other twenty-one items related to pharmacists characteristics and practice background were not direct adaptation but were made up through review and designed based on the experiences of the researcher's supervisor, and feedback from our pretests as mentioned earlier.

The questionnaire consists of five sections as follows:

Section one: this section contains questions related to the samples of demographic characteristics and their practice profiles in the hospital and community pharmacy settings, respectively. Section two: the questionnaire was on pharmacists' understanding and comprehension on pharmaceutical care. In this section, the instrument was designed according to the traditional Likert format in which it was

structured as statement of opinion and the response choice ranged from strongly disagree to strongly agree. The scores in each statement ranging from 1 to 5. Section three: this section was further divided into two parts, part one was constructed to explore the pharmacists perception on the various activities related to their current pharmacy practice. The activities that were considered essential to both the hospital and community pharmacists include the management, dispensing, patient care, and public health activities. For each of the statements constructed in part 1; the respondents had to provide responses to the different scales, which is namely, the practice scale, the importance scale, and the competent scale. The practice scale measures whether the respondents are currently performing the activity or not. Then the respondents need to state the importance of such activity based on 5-point Likert scale. Lastly, the respondents were asked to rate their competency on the 5-point Likert scale same as importance scale. In the second part of section 3 of the instrument, the respondent was asked to state the percentage (%) of time spent in their current pharmacy practice. The respondent was also asked to state the percentage (%) of time that they would like to spend on the various activities of pharmacy practice. Section four: this section comprises 15 items. It was constructed to explore the pharmacists' perception towards achieving and developing pharmaceutical care practice. For each of the statement constructed in this section, the respondents had to provide responses to three different scales; namely the importance, competence, and the practicality scales. Firstly, by rating a 5- point Likert scale, the respondents had to determine the importance of the stated activity, followed by stating their level of competence to perform the activity. Lastly, the respondents had to determine the practicality of such activity with respect to the local scenario of the pharmacy practice in Malaysia. Section five: this section explores the respondent's perception with regards to the barriers on the provision of pharmaceutical care practice. To ease the respondents' lists of

perceived barriers to the provision of pharmaceutical care practice was tabulated along with a 5-point Likert scale. The respondents were asked to also specify any other perceived barriers, which were not in the list. Lastly, the respondents were requested to provide suggestion and recommendation to overcome such barriers.

#### **STUDY DESIGN**

The cross-sectional study was conducted, which involved exploring and collecting data from community and hospital pharmacists in the West and East Malaysia (Sabah and Sarawak), employing the self-administered mailed questionnaire approach.

#### **SAMPLE SIZE CALCULATION**

The sample size was calculated based on a pilot test of our study and depended on two issues. Firstly, the differences in mean scores between hospital and community groups. Whereas the sample size was calculated, using the software Power and precision in sample size calculation computer program (Borenstein et al., 2000). The detectable difference in mean scores of main outcome was set at 0.3 score, from 3.1 to 3.4 of score means of the two groups. We used the statistical  $(1-\beta)$  of 80% and the statistical significance level at  $\alpha = 0.05$ . The estimated sample size was 100 pharmacists for each group to detect these differences in mean scores. Secondly, the sample size was calculated based on formula stated by Habbani *et al.*, (2000) assuming 5% level of reliability (accuracy) with 95% confidence interval. The 60% of the target population (hospital and community pharmacists) estimated to have a particular characteristic (direct patient contact), since out of 3223 registered pharmacists in Malaysia, there are 1496 community, 413 hospital pharmacists (MOH, 2005). According to the response rate of our pilot test (41% as mentioned earlier), 927 pharmacists were consider as a suitable target for our mail survey, so as to catch a number of respondents approximately equal to the calculated sample size.

#### **SAMPLING TECHNIQUE**

The community pharmacists participated in our study were selected according to pharmacies names, rather than pharmacists names. They recruited by systematic random sampling technique. Sampling frame was compiled from menus of "Pharmacy Directory Malaysian Pharmaceutical Society Kedah and Perlis", "website of Malaysian Pharmaceutical Society", and "Malaysian MIMS". Pharmacies names were arranged alphabetically and the last one of each three names were selected. One pharmacist represented each pharmacy. Since we could not find any source to create such sampling frame for hospital pharmacists, subjects were recruited by stratified random sampling technique. Five and two sets of questionnaires were sent to 18 state hospital and 110 district hospitals, respectively. The chief pharmacists were asked to select and distribute the questionnaires to the required number of pharmacists working under their supervision. Cover letter addressed to the chief pharmacists, had specified that the pharmacists must be selected randomly from different pharmacy departments.

#### **DATA COLLECTION PROCEDURES**

The mode of data collection chosen was a self administered mailed questionnaire. The method was chosen in relation to the big sample frame and the characteristics of the sample. Mail survey is an economical method of surveying large samples. To reduce human error and survey's cost, all the tasks including those related to precision and accuracy in the data collection such as typing, printing, sorting and posting was done solely by the researcher. The steps taken had implications to the response rates and survey costs. Several ways to increase the response rate of mails which have been suggested by Sproul, (1988) and Fowler, (1984) were done in this study: inclusion of a cover letter, providing clear directions; including all checked items rather than having to generate responses; structuring item responses for the entire questionnaire so that it could be answered quickly and easily. In addition, the addresses were typed on sticker paper rather than hand written to pledge the

clarity of pharmacists' addresses. The questionnaire was professionally typed and printed so that its appearance gave the expression of credibility and professionalism.

In the final phase of the study, 323 and 604 questionnaires were mailed to the pharmacists in hospitals and community pharmacy settings on the 5 and 13 May 2005, respectively. In reducing the non-response rate of the mailed survey, verbal reminders regarding the survey were done by telephoning the subjects who had not responded by the first dateline (25th & 31st May 2005). The importance of the survey and a high response rate of the study were also emphasized. Reminders in the form of verbal conversation by Malay and Chinese trained data collectors were chosen because the researcher felt that this mechanism would be more friendly and thus more effective than written reminders. Receipt of the survey's feedback was recorded in a log sheet to monitor responses and minimize follow-up telephone calls. A second verbal reminder was not done due to financial constraints.

Data collection was finally terminated on the 30th June 2005, approximately two months after the initial mailing. The subjects' responses were then immediately entered into the chosen statistical computer software. All the ethical clearances was made with the concerning governing bodies.

#### **EVALUATION OF NON-RESPONSE BIAS**

The failure to collect data from a high percentage of subjects in a sample was considered one of the main contributory factors to survey error (Fowler, 1984). The effect of non-response on survey estimates; depends on the percentage of these non-respondents and the extent to which those not responding are biased (i.e. systematically different from the whole population).

#### **DATA ANALYSIS**

The data was analyzed using the SPSS® (Statistical Package for the Social Sciences) software program for windows® Version (12.0), and Microsoft Office Excel 2003. Both descriptive statistics and

inferential statistics were used to analyze the data obtained from the research. Descriptive statistics were used to organize the data (answers of the respondents to each structural indicators) obtained in the survey (i.e. frequency distribution, percentile, range, mean, and standard deviation). Thus was used to summarize the data in general and by different categories of each variable to describe the findings of the survey. Inferential statistics that often rely on probability theory and statistical tests (i.e. One Sample t-test, Mann-Whitney U test, Student t-test, Chi Square test, Kruskal-Wallis test, ANOVA, Wilcoxon test, and 2-Proportion Sample test) were also used to enable the researcher to generalize the findings of the descriptive statistics to the population (all community and hospital pharmacists in Malaysia) that were being studied. In addition, regression analysis was conducted to explore which of the respondents' variables that will be predictive of the likelihood to implement and develop pharmaceutical care practice in the studied population.

#### **RESULT(S):**

Of the 927 questionnaires mailed to the hospital and community pharmacists, 269 were returned back. Out of these, nine (9) were rejected as many of the sections were not filled or it was returned as a blank questionnaire. Thus, the final sample consisted of 260 usable questionnaires, which represented a response rate of 28%. Further analysis of the usable questionnaires, in terms of the responses from both the hospital and community pharmacists; provide a response rate of 45.8% and 18.5%, respectively. The respondents' demographic characteristics were collected in two institutions (Hospital and community pharmacies) and analyzed according to age, race, and gender of respondents. The medians age of the hospital and community pharmacy respondents were found to be 29 and 36 years old, respectively (mean  $31.8 \pm 7.03$  and  $36.8 \pm 8.78$  respectively). It was observed that most of the respondents from the both the hospital and

community pharmacy settings tend to be in the younger age group (24-35 years) (77%) and (48.2%) respectively, ( $P < 0.001$ , Chi-square) (Table 1). As for the ethnicity groups of the respondents, most of them were Malays (60%) with the remaining being Chinese (32.3%), and others (7.3%). An interesting observation was noted with regards to the preponderance of a particular ethnicity group with respect to the pharmacy practice setting. It was found that community pharmacy practice seems to be more favorable among Chinese respondents (57.1%) whereas hospital pharmacy practice seems to be more favorable among Malay respondents (74.1%) ( $P < 0.001$ , Chi-square). As expected, in relation to gender of respondents, more than two-thirds of them were female. It seems that majority of hospital (83.7%), and community (53.6%) respondents were females ( $P < 0.001$ , Chi-square) (Table 1). Those items described the management activities showed a significantly higher proportion of the community pharmacy respondents who were engaged in activities such as purchasing and controlling inventory (92%), financial management (87%), and sales and promotion (74%) when compared to the hospital pharmacy respondents which revealed a (66%), (54%), and (19%) engaging in such activities respectively. 2-Proportions Sample test showed highly a significant value of  $p < 0.05$  for these variables when tested to estimate the differences in proportions (EDP). The overall of the community pharmacy respondents for this category of activities were (81%) and this was significantly higher ( $p < 0.05$ ; Chi-Square, 2-sided) than these stated by the hospital pharmacy respondents (60%).

With regards to the dispensing activities, the proportions of hospital pharmacy respondents who carried out the dispensing functions (85%), utilizing a unit-dose distribution system (32%), and preparing parenteral therapy (19%) activities were significantly higher than the proportions showed by the community pharmacy respondents performing dispensing, utilizing a unit-dose distribution, and preparing parenteral therapy (19%), (11%), and (5%) respectively (Table 2). The result revealed that

both the hospital and community pharmacy respondents indicated that the four activities of the pharmacy practice were perceived important and they were competent to performing it. These were indicated by the means that were significantly greater than the midpoint 3 when the One Sample t-test was conducted. It was important to note that, although the community pharmacy respondents indicated that they were competent to carry out dispensing (mean= 3.01), and public health activities (mean= 3.02) the means were not significantly greater than the midpoint 3 ( $p = 0.926$ , One Sample t-test) and ( $p = 0.819$  One Sample t-test,) respectively. Accordingly, the study found that less than 50% of community pharmacy respondents agreed about the importance of dispensing (43%), and public health activities (47%) respectively. Consequently, 34% and 28% of them perceived that they were competent to practice the dispensing and public health activities, respectively. Other interesting observations were noticed when comparing the means differences between hospital and community pharmacy groups. The results revealed that the means of hospital pharmacy respondents' perceived the importance and were competent to perform the dispensing, patient care, and public health activities were found to be significantly greater than the community group ( $p < 0.001$ , Mann-Whitney U test). As expected, the community pharmacy respondents perceived the importance and rated themselves to be competent to perform the management activity compared to their counterparts in the hospital pharmacy setting (Table 3). The average score of the respondents' perception on the importance and their competence were calculated for all the 20 activities of current pharmacy practice. The results found that both the hospital and community pharmacy respondents indicated that carrying out "current pharmacy practice" activities were important (mean= 4.31) and (mean= 3.71), and they were competent to carry out these activities (mean= 3.63) and (mean= 3.38) respectively. The means were significantly greater than the midpoint 3 ( $p <$

0.001; One Sample t-test). In general, there were 79% of the hospital pharmacy respondents and 59% of the community pharmacy respondent perceived the importance of current pharmacy practice and 54% and 43 were rated they are competent to practice current pharmacy activities (Table 3).

Non-parametric two ways interaction analyses specifically, the Kruskal-Wallis test was conducted to determine the effects of practice settings (hospital and community pharmacy) and respondents characteristics (i.e., age, gender, race, graduate place, graduate year,

highest pharmacy degree, duration of service, geographical location, and consultation room) on their perception of importance and competence to perform all the four main activities of current pharmacy practice (i.e., management, dispensing, patient care, and public health activities). Out of these variables mentioned, only age, year of graduation, and duration of service showed significant differences among the cell means of the current pharmacy practice as depicted in Table 4,5 and 6.

**Table 1. Socio-demographic background of respondents in relation to type of practice settings (hospital and community pharmacy)**

Socio-demographic	Hospital †	Community †	Total ‡	P-value *
<b>Age category (years)</b>				<0.001
24 – 35	114 (77)	54 (48.2)	168 (64.6)	
36 – 45	24 (16.2)	40 (35.7)	64 (24.6)	
46 and above	10 (6.8)	18 (16.1)	28 (10.8)	
<b>Total</b>	<b>148 (100)</b>	<b>112 (100)</b>	<b>260 (100)</b>	
<b>Ethnicity</b>				<0.001
Malay	109 (74.1)	47 (42)	156 (60.2)	
Chinese	20 (13.6)	64 (57.1)	84 (32.4)	
Other	18 (12.2)	1 (0.9)	19 (7.3)	
<b>Total</b>	<b>147 (100)</b>	<b>112 (100)</b>	<b>259 (100)</b>	
<b>Gender</b>				<0.001
Male	24 (16.3)	52 (46.4)	76 (29.3)	
Female	123 (83.7)	60 (53.6)	183 (70.7)	
<b>Total</b>	<b>147 (100)</b>	<b>112 (100)</b>	<b>259 (100)</b>	
<b>Place of graduation</b>				0.003
USM	90 (61.6)	69 (61.6)	159 (61.6)	
UKM	23 (15.8)	4 (3.6)	27 (10.5)	
UM	9 (6.2)	6 (5.4)	15 (5.8)	
Other	24 (16.4)	33 (29.5)	57 (22.1)	
<b>Total</b>	<b>146 (100)</b>	<b>112 (100)</b>	<b>258 (100)</b>	
<b>Year of graduation</b>				<0.001
Less than 1990	22 (15)	36 (32.4)	58 (22.5)	
1990 – 2005	125 (85)	75 (67.6)	200 (77.5)	
<b>Total</b>	<b>147 (100)</b>	<b>111 (100)</b>	<b>258 (100)</b>	
<b>Qualification</b>				0.49
Bpharm	97 (65.5)	71 (63.4)	168 (64.6)	
B.Sc pharmacy	33 (22.3)	32 (28.6)	65 (25)	
Mpharm	14 (9.5)	6 (5.4)	20 (7.7)	
Other	4 (2.7)	3 (2.7)	7 (2.7)	
<b>Total</b>	<b>148 (100)</b>	<b>112 (100)</b>	<b>260 (100)</b>	

† Percentages of hospital and community pharmacy respondents are column %

‡ Percentages are total, \* Chi- Square test



**Table 2: Pharmacy practice activities currently being performed by the respondents**

Pharmacy practice activities	Proportion of respondents performing pharmacy activities n (%)		EDP*	95% CI	P-value**
	Hospital (n=148)	Community (n= 112)			
	<b>1. Management activities</b>				
Personal management	84.5	83	1.5	- 0.08; 0.12	0.70
General management	75.7	70.5	5.2	- 0.07; 0.17	0.42
Purchasing /controlling inventory	66.2	92	25.8	- 0.37; - 0.15	<0.05
Financial management	54.1	86.6	32.5	- 0.45; - 0.21	<0.05
Sales and promotions	18.9	74.1	55.2	- 0.67; - 0.43	<0.05
<b>Average score</b>	<b>59.9</b>	<b>81.2</b>	<b>21.3</b>	<b>- 0.31; - 0.07</b>	<b>&lt;0.05</b>
<b>2. Dispensing activities</b>					
Dispensing functions	85.1	18.8	66.3	0.56; 0.76	<0.05
Compounding prescription extemporaneous	62.8	59.4	3.4	- 0.09; 0.18	0.56
Developing patient records	60.1	60.7	0.6	- 0.15; 0.13	0.88
Utilizing a unit-dose distribution system	32.4	10.7	21.7	0.09; 0.32	<0.05
Preparing parenteral therapy	18.9	4.5	14.4	0.05; 0.23	<0.05
<b>Average dispensing score</b>	<b>51.9</b>	<b>31.7</b>	<b>20.2</b>	<b>0.07; 0.33</b>	<b>0.003</b>
Pharmacy practice activities	Proportion of respondents performing pharmacy activities n (%)		EDP*	95% CI	P-value**
	Hospital (n=148)	Community (n= 112)			
	<b>3. Patient care activities</b>				
Counseling on medications	89.2	99.1	9.9	- 0.16; - 0.04	0.01
Consulting with doctors	84.5	49.1	34.7	0.23; 0.47	<0.05
Discussing patient cases related to DTPs	64.2	29.5	34.7	0.21; 0.47	<0.05
Counseling patients/ patrons on OTC drugs	55.4	99.1	43.7	- 0.54; - 0.34	<0.05†
Providing ward pharmacy services	45.3	27.7	17.6	0.04; 0.30	0.01
self-monitoring and self-diagnostic products	43.2	95.5	52.3	- 0.63; - 0.43	<0.05†
Screening of diabetes and monitoring BP	14.2	92.9	78.7	- 0.87; - 0.71	<0.05
<b>Average patient care score</b>	<b>54.9</b>	<b>70.4</b>	<b>15.5</b>	<b>- 0.28; - 0.02</b>	<b>0.03</b>
<b>4. Public health activities</b>					
Answering poison and drug information calls	81.1	70.5	10.6	- 0.02; 0.217	0.09
Delivering a public talk related to rational drug use	42.6	20.5	22.1	0.09; 0.35	0.01
Participating in health fairs	28.4	45.5	17.1	- 0.31; - 0.05	0.01
<b>Average public health score</b>	<b>50.7</b>	<b>45.5</b>	<b>5.2</b>	<b>- 0.09; 0.19</b>	<b>0.4</b>
<b>Overall average score</b>	<b>54.4</b>	<b>59.5</b>	<b>5.09</b>	<b>- 0.19; 0.09</b>	<b>0.48</b>

\* Estimating differences in proportions

\*\*2-Proportions Sample test (Chi-Square test; P-Value &lt; 0.05)

† Fisher's exact test, P-Value &lt; 0.05

**Table 3: Importance and competence perception of the current pharmacy practice**

Activity	Hospital (n= 112)						Community (n= 148)						***p-value
	Importance			Competence			Importance			Competence			
	Agree* n (%)	Mean	**p-value	Agree* n (%)	Mean	**p-value	Agree* n (%)	Mean	**p-value	Agree* n (%)	Mean	**p-value	
Management	72.06	4.08 a	<0.001	48.66	3.53 b	<0.001	76.24	4.10 a	<0.001	54.32	3.6 b	<0.001	a= 0.77 b= 0.39
Dispensing	81.08	4.35 a	<0.001	54.74	3.71 b	<0.001	43.22	3.19 a	0.019	33.94	3.01 b	0.926	a<0.001 b<0.001
Patient care	83.86	4.40 a	<0.001	67.94	3.71 b	<0.001	70.29	3.94 a	<0.001	56.39	3.65 b	<0.001	a<0.001 b= 0.50
Public health	79.93	4.31 a	<0.001	45.73	3.49 b	<0.001	47.00	3.38 a	<0.001	27.70	3.02 b	0.819	a<0.001 b<0.001
<b>Overall average score</b>	<b>79.23</b>	<b>4.31 a</b>	<b>&lt;0.001</b>	<b>54.27</b>	<b>3.63 b</b>	<b>&lt;0.001</b>	<b>59.19</b>	<b>3.71 a</b>	<b>&lt;0.001</b>	<b>43.09</b>	<b>3.38 b</b>	<b>&lt;0.001</b>	<b>a&lt;0.001†</b> <b>b= 0.001†</b>

• The scale used as 4 and 5 – agree (importance)

\* The scale used as 4 and 5 – agree (competence)

\*\* P value < 0.001 (One Sample t-test)

\*\*\* P value < 0.001 (Mann-Whitney U test)

† P value ≤ 0.001 (Independent t-test)

a= mean difference of importance perception between hospital and community groups

b= mean difference of competence perception between hospital and community groups

**Table 4: The effect of respondent's age groups and type of practice setting on their perceptions of the importance and competence to perform the current pharmacy practice**

Age groups (years)	24- 35 n = 168 Mean	36- 45 n = 64 Mean	46 and above n = 28 Mean	Practice setting mean	p-value†
<b>Importance</b>					
<i>Management</i>					
Hospital	4.06	4.04	4.42*	<b>4.08</b>	0.05 *
Community	4.17	4.12	3.86	<b>4.10</b>	
<b>Average mean</b>	<b>4.09</b>	<b>4.09</b>	<b>4.06</b>		
<i>Dispensing</i>					
Hospital	4.28	4.50	4.62*	<b>4.34</b>	0.048 *
Community	3.25	3.23	2.90	<b>3.19</b>	
<b>Average mean</b>	<b>3.95</b>	<b>3.69</b>	<b>3.51</b>		
<i>Patient care</i>					
Hospital	4.39	4.50	4.51	<b>4.42</b>	0.11 ‡
Community	4.05	3.88	3.73	<b>3.94</b>	
<b>Average mean</b>	<b>4.28</b>	<b>4.11</b>	<b>4.01</b>		
<i>Public health</i>					
Hospital	4.31	4.29	4.27	<b>4.30</b>	0.80
Community	3.43	3.43	3.17	<b>3.38</b>	
<b>Average mean</b>	<b>4.02</b>	<b>3.75</b>	<b>3.56</b>		
<b>Competence</b>					
<i>Management</i>					
Hospital	3.48	3.57	3.94*	<b>3.52</b>	0.019 *
Community	3.61	3.71	3.31	<b>3.60</b>	
<b>Average mean</b>	<b>3.52</b>	<b>3.65</b>	<b>3.54</b>		
<i>Dispensing</i>					
Hospital	3.62	4.01	4.10*	<b>3.71</b>	0.016 ‡
Community	3.05	3.07	2.74	<b>3.01</b>	
<b>Average mean</b>	<b>3.44</b>	<b>3.41</b>	<b>3.23</b>		
<i>Patient care</i>					
Hospital	3.62	3.97	4.10*	<b>3.71</b>	0.001‡
Community	3.78	3.63	3.29	<b>3.65</b>	
<b>Average mean</b>	<b>3.67</b>	<b>3.76</b>	<b>3.58</b>		
<i>Public health</i>					
Hospital	3.46	3.58	3.67	<b>3.50</b>	0.137
Community	3.00	3.24	2.57	<b>3.02</b>	
<b>Average mean</b>	<b>3.32</b>	<b>3.37</b>	<b>2.96</b>		

† Two Ways Interaction analysis (Kruskal-Wallis Test)

‡ ANOVA

\* P-value significant at level of  $\leq 0.05$

**Table 5: The effect of respondent's year of graduation and type of practice setting on their perceptions of the importance and competence to perform the current pharmacy practice**

year of graduation	Before 1990 n = 58	1990- 2005 n = 200	Practice setting mean	p-value †
<b>Importance</b>				
<b>Management</b>				
Hospital	4.37	4.03*	<b>4.08</b>	0.05
Community	4.13	4.08	<b>4.11</b>	
<b>Average mean</b>	<b>4.19</b>	<b>4.07</b>		
<b>Dispensing</b>				
Hospital	4.19	4.37	<b>4.34***</b>	0.36
Community	3.19	3.18	<b>3.19</b>	
<b>Average mean</b>	<b>3.51</b>	<b>3.98**</b>		
<b>Patient care</b>				
Hospital	4.42	4.41	<b>4.42</b>	0.46
Community	3.87	4.00	<b>3.94</b>	
<b>Average mean</b>	<b>4.05</b>	<b>4.28</b>		
<b>Public health</b>				
Hospital	4.40	4.29	<b>4.31***</b>	0.27
Community	3.31	3.45	<b>3.38</b>	
<b>Average mean</b>	<b>3.66</b>	<b>4.01**</b>		
<b>Competence</b>				
<b>Management</b>				
Hospital	3.84	3.47*	<b>3.52</b>	0.005 ‡
Community	3.47	3.67	<b>3.60</b>	
<b>Average mean</b>	<b>3.61</b>	<b>3.54</b>		
<b>Dispensing</b>				
Hospital	4.05	3.65*	<b>3.71***</b>	0.042 ‡
Community	2.97	3.03	<b>3.01</b>	
<b>Average mean</b>	<b>3.36</b>	<b>3.42</b>		
<b>Patient care</b>				
Hospital	4.06	3.65*	<b>3.71</b>	0.001 ‡
Community	3.45	3.75	<b>3.65</b>	
<b>Average mean</b>	<b>3.68</b>	<b>3.69</b>		
<b>Public health</b>				
Hospital	3.71	3.46	<b>3.50***</b>	0.123 ‡
Community	2.92	3.06	<b>3.02</b>	
<b>Average mean</b>	<b>3.22</b>	<b>3.31</b>		

† Two Ways Interaction analysis (Kruskal-Wallis Test; P-value  $\leq 0.05$ )

‡ ANOVA; P-value  $\leq 0.05$

\* P-value significant at level of  $\leq 0.05$

\*\* P-value  $\leq 0.05$  (Mann-Whitney U test)

\*\*\* P-value  $\leq 0.05$  (Mann-Whitney U test or Independent t-test)

**Table 6: The effect of respondent's duration of services and type of practice setting on their perceptions of the importance and competence to perform the current pharmacy practice**

Duration of services (years)	< 5 n = 140 Mean	6- 10 n = 55 Mean	11-20 n = 51 Mean	21- 30 n = 11 Mean	Practice setting mean	p-value †
<b>Importance</b>						
<b>Management</b>						
Hospital	4.10	3.87	4.04	4.53*	<b>4.08</b>	0.031
Community	4.24	4.05	4.07	3.33	<b>4.11</b>	
<b>Average mean</b>	<b>4.14</b>	<b>3.97</b>	<b>4.05</b>	<b>4.09</b>		
<b>Dispensing</b>						
Hospital	4.36	3.96	4.61	4.73*	<b>4.34***</b>	0.005 ‡
Community	3.34	3.15	3.06	2.60	<b>3.18</b>	
<b>Average mean</b>	<b>4.04</b>	<b>3.52</b>	<b>3.56</b>	<b>4.15**</b>		
<b>Patient care</b>						
Hospital	4.43	4.20	4.56	4.70	<b>4.42***</b>	0.06
Community	4.11	3.86	3.82	3.57	<b>3.94</b>	
<b>Average mean</b>	<b>4.33</b>	<b>4.01</b>	<b>4.06</b>	<b>4.39</b>		
<b>Public health</b>						
Hospital	4.33	4.12	4.35	4.42	<b>4.30***</b>	0.19
Community	3.55	3.21	3.38	2.44	<b>3.38</b>	
<b>Average mean</b>	<b>4.09</b>	<b>3.62</b>	<b>3.71</b>	<b>3.88</b>		
<b>Competence</b>						
<b>Management</b>						
Hospital	3.45	3.62	3.61	3.93	<b>3.53</b>	0.093 ‡
Community	3.63	3.45	3.74	3.13	<b>3.60</b>	
<b>Average mean</b>	<b>3.51</b>	<b>3.53</b>	<b>3.69</b>	<b>3.71</b>		
<b>Dispensing</b>						
Hospital	3.69	3.56	4.03	4.08	<b>3.73***</b>	0.058 ‡
Community	3.13	2.97	2.92	2.60	<b>3.01</b>	
<b>Average mean</b>	<b>3.51</b>	<b>3.23</b>	<b>3.28</b>	<b>3.67**</b>		
<b>Patient care</b>						
Hospital	3.65	3.67	4.02	4.18*	<b>3.72</b>	0.031
Community	3.81	3.52	3.58	3.43	<b>3.65</b>	
<b>Average mean</b>	<b>3.70</b>	<b>3.59</b>	<b>3.73</b>	<b>3.97</b>		
<b>Public health</b>						
Hospital	3.53	3.40	3.53	3.67	<b>3.52***</b>	0.74 ‡
Community	3.06	2.94	3.06	2.56	<b>3.02</b>	
<b>Average mean</b>	<b>3.39</b>	<b>3.15</b>	<b>3.22</b>	<b>3.30</b>		

† Two Ways Interaction analysis (Kruskal-Wallis Test; P-value  $\leq$  0.05)

‡ ANOVA; P-value  $\leq$  0.05

\* P-value significant at level of  $\leq$  0.05

\*\* P-value  $<$  0.05 (Kruskal-Wallis Test or ANOVA)

\*\*\* P-value  $<$  0.05 (Mann-Whitney U test or Independent t-test)

## DISCUSSION:

In terms of age groups, both the hospital (77%) and community (48%) pharmacy respondents tend to be in the younger age group (24-35 years). This was consistent with another local study conducted in 2004 with hospital pharmacists, which reported that this study

population consists of quite young pharmacists, as majority of them (53.5%) have not exceeded 35 years old (Othman, 2004). However, comparisons across literatures were limited by the lack of studies particularly in the local community pharmacy setting. In terms of ethnicity groups, significant findings were

noted with regards to the preponderance of a particular ethnic group with respect to a particular pharmacy practice setting ( $P < 0.001$ , Chi-square). It was found that community pharmacy practice seems to be more favorable among the Chinese pharmacists whereas the hospital pharmacy practice seems to be more favorable among the Malay pharmacists. This finding was similar to another local study conducted by Ab Rahman *et al.*, (2001). As expected, more than two-thirds ( $n = 183$ ; 70.7%) of the respondents were female. It seems that a majority of the hospital and community pharmacy respondents were females (83.7%), and (53.6%), respectively. This might not necessarily reflect a response bias but merely the portrayed scenario of gender distribution in the government hospitals and community pharmacy settings. Slightly higher proportions of female pharmacists had been reported by other studies (Rossing *et al.*, 2003; Kang *et al.*, 2002; Dunlop and Shaw, 2002; Smith *et al.*, 1990), and resemble a local study conducted by Othman, (2004). The "Feminization" of pharmacy was an aspect which had received much attention, with an increased number of studies in the developed and developing countries (Gidman *et al.*, 2007; Carvajal and Hardigan, 2004; Hassell, 2003; Carvajal, 1999; Wolfgang, 1995; Muzzin *et al.*, 1994). The present study found that the majority of the respondents were USM graduates ( $n = 159$ ; 61.2%), and most of the respondents ( $n = 200$ ; 77 %) were considered recent graduates (1990 - 2005). This was an expected finding as until 1995, there was only one pharmacy school in Malaysia, the Universiti Sains Malaysia (USM) which was established in 1972, to offer pharmaceutical education leading to a degree in pharmacy (B.Pharm.). Only in 1995, two more universities, the University of Malaya (UM) and the Universiti Kebangsaan Malaysia

(UKM), started to offer pharmaceutical courses. Currently, there are eight pharmacy schools in the country (Ab Rahman and Bahari, 2004; Ab Rahman *et al.*, 2001; Yeoh, 1997).

The study findings describe what hospital and community pharmacists are doing at present in the pharmacy arena. It provides insight into the opportunities and threats facing the profession and an understanding of its strengths and weaknesses. The study found that the current pharmacy practice was performed by 54% of the hospital pharmacy respondents and 59% of the community pharmacy respondents. In more details, the study revealed that the proportions of respondents who were currently performing (or practicing) the twenty items studied were varied according to their practice settings.

Related to the items describing the dispensing activities of the current pharmacy practice, the study found that the proportions of hospital pharmacy respondents who were implementing and utilizing a Unit-Dose Distribution System (32%), preparing parenteral therapy (19%) activities which were significantly higher than the proportions of community pharmacy respondents (11%) and (5%) respectively. These activities were performed by less than 50% of both hospital and community pharmacy respondents. One report by Hassan, (1990a) states that the value of adding pharmacists by utilizing a Unit-Dose Distribution System in most hospitals in the country. Another study by Abdul Aziz *et al.*, (1990) found that the rate of errors, which was still quite high in the hospital, was lowered by utilizing a Unit-Dose Distribution System compared to those facilities using the traditional distribution system. In the same report of Hassan, in (1990a) demonstrates that pharmacists coordinated Total Parenteral Nutrition Service (TPN) had not been widely available to hospitalized patients in Malaysia.

Preparation and compounding of TPN were minimal and were limited to purchasing and distribution of the preparations. Although utilizing a Unit-Dose Distribution System and preparing parenteral therapy were considered a hospital practice domain, our study found 11% and 5% of the community pharmacy respondents practiced it, respectively. One possible explanation for these observations may be related to the flux of a substantial number of pharmacists who left the public sector for the private service (Bahri, 2002). In addition, our finding also was in line with the study conducted by Sarriff, (1994) which revealed that the majority (70%) of community pharmacy respondents had a prior experience of being a hospital pharmacist. The result also found that the overall average of dispensing activity that was performed by community pharmacy respondents was significantly lower (32%) when compared to the hospital pharmacy respondents (52%). In this regards, the dispensing function was only performed by 19% of the community pharmacy respondents. In line with these findings, Wong (2001) mentioned that, the community pharmacists do not have full control over the supply of medicines. This finding was not an unusual practice as the medical practitioners in both the private clinics and private hospitals had the prerogative to dispense medicines. This phenomenon was not only confined to the local context but seems to be an international issue as reported in several studies (Kang *et al.*, 2002; Kim, 1999; Yang, 1999; Cho, 1998). These studies conferred the lack of the role differentiation between health care providers especially duplication practice by physicians and pharmacists in providing medication therapy which had resulted in overuse and misuse of medicines among people. In the area of pharmaceutical care, there were two trends about the issue of medication dispensing by

pharmacists that needed to be viewed in a wider perspective. The first trend was that the care component in pharmaceutical care must be over and above the dispensing function of the pharmacists. Therefore, the lack of dispensing activities stated by respondents in the community pharmacy setting should be addressed in line with the concept of pharmaceutical care. If the community pharmacists understand and accept the new concept of pharmacy practice, a new paradigm and approach to practice will be imposed. This is because the pharmacists were there, not to count and pour, not to dispense and supply of the medicines, but to provide care to patients, to prevent, identify and resolve a patient's drug therapy needs. The pharmacist's preoccupation with dispensing drug products may constitute a pharmacy barrier to the acceptance of this new philosophy among product-oriented practitioners, as drug distribution functions continue to be their major responsibility. Patient-care activities were a second focus and performed only when there was spare time or extra staffs available. Strand and her colleagues, in the Minnesota project, firmly believe that, unlike several other models of pharmaceutical care around the world, this practice was not a "blot on extra" to dispensing (Strand *et al.*, 1997). It was quite separate and means that any professional activities that was over and above dispensing because they believe that pharmacist cannot do both pharmaceutical care practice and dispensing (Mason, 2001). In another study, the authors believed that pharmacists were competent and knowledgeable and thus should be doing more than just dispensing medication (Ranelli and Biss, 2000). The second trend was considered the dispensing function is matters, which were linked to the pharmaceutical, care practice. As some pharmaceutical care models, like such practice in the Netherlands, which was

provided as the dispensing service and was not perceived as a matter that had to be separated (Van Mil, 1999). In this trend, the low performing of the dispensing functions by community pharmacy respondents might be considered as threats facing the profession and pharmacists providing pharmaceutical care practice that should be addressed and taken into consideration. Regarding the management activities of the current pharmacy practice, the results found that there were significantly higher proportions of the community pharmacy respondents who were practicing the purchasing and controlling of inventory (92%), followed by the financial management (86.6%), and sales and promotion (74%) when compared to the hospital pharmacy respondents (66%), (54%), and (19%) respectively. The research builds hypotheses to explain this point, as respondents may have believed that these activities were merely a community pharmacy practice domain. In addition, the results also found that the overall average of management activities of community pharmacy respondents (81%) was significantly higher than hospital pharmacy respondents (60%).

With regards to the patient care activities, the low percentage of the community pharmacy respondents engaged in the patient care activities such as “consulting with doctors”, and “presenting and discussing patient cases related to DTPs” were expected results for the various reasons mentioned in the preceding discussion. Another concern was related to the availability of space or an area for consultation with patients. As noted earlier when asked about the availability of consultation room, about half of the community pharmacy respondents (50.5%) only responded by stating that they would consider such a room. It was important to be present physically at the patient care area (May, 1993).

However, the community pharmacy respondents showed excellent responses performing specific activities such as “proper use of self-monitoring and self-diagnostic products”, and “screening of diabetes and monitoring blood pressure”. These activities were performed by less than 50% of the hospital pharmacy respondents and the proportions of performing the above activities were (43.2%) and (14.2%), and the performance of such activities were significantly less than the community pharmacy respondents (96%), and (93%) respectively. The explanation of this observation was probably due to the hospital pharmacy respondents believe that screening of diabetes and monitoring of blood pressure and the related activities were traditionally considered being the domain of doctors or being done by the hospital labs (Futter and Burton, 1998). Moreover, the majority of the community pharmacies in Malaysia currently offer professional activities to control blood pressure, reduce the number of asthmatic attacks, and controlled blood sugar (Wong, 2001). This was supported by the fact that, 55% of the hospital and 99% of the community pharmacy respondents provide counseling to their patients and patrons on over the counter (OTC) medications. In fact, it was stated that the community pharmacists were in a unique position to provide medication services for their patients, in particular counseling their patients on the use of prescribed and over the counter medications, monitoring for adverse drug reactions (ADRs) and provision of drug



information to their community (Sarriff, 1994; Luscombe et al., 1992; Sesti, 1991; Adamic *et al.*, 1986; Ortiz *et al.*, 1984). Overall, the patient care activities studied were performed by 70% of the community and 55% of the hospital pharmacy respondents. The study revealed that both the hospital and community pharmacy respondents indicated that carrying out the management, dispensing, patient care, and public health activities were important and they were competent to carry out these activities and the means were significantly greater than the midpoint 3 (One Sample t-test). It was important to note that, although the community pharmacy respondents indicated that they were competent to carry out dispensing activity (mean= 3.01), the mean was not significantly greater than the midpoint 3 ( $p= 0.926$ , One Sample t-test). Accordingly, the study also found that less than 50% of community pharmacy respondents agreed about the importance of dispensing activities (43%). Consequently, 34% of them were competent to practice the dispensing. This was expected as this activity was performed or practised only by less than 50% of the community pharmacy respondents as mentioned earlier in [4.4.1 (a)]. Our finding about the community pharmacy respondents' perceived importance and competence of dispensing activities was in agreement with the study by Ranelli and Biss (2000), which believed that pharmacists were competent and knowledgeable, and thus should be doing more than just dispensing medication.

They suggested that the pharmacist's primary relationship is with the patient as a therapist rather than dispensing functions. Therefore, it is important to concentrate on activities such as provision of information about drug effectiveness, drug interactions, patient compliance, and prevention of medication-related errors.

Other interesting observations were noticed when compared the calculated means differences between hospital and community pharmacy respondents. The study revealed that respondents in the community pharmacy setting perceived the importance and rated their competence to management activity higher than the respondents in the hospital pharmacy setting. This finding was consistent with the study conducted in 1990 by Smith *et al.* the study reported that pharmacist in the community pharmacy settings rated the importance and their competence on management more than the hospital pharmacists. Our result also revealed that the means of hospital pharmacy respondents' perceived the importance and their competence to perform dispensing, patient care, and public health activities were significantly greater or higher than the community pharmacy respondents. However, these observations were different from the result of Smith *et al.*, (1990) which, found that the means of hospital pharmacists who rated their competence to dispensing and patient care activities were less than the community pharmacy respondents. This difference was probably due to the pharmacy practice in Malaysia that was different between the hospital and community sector. Hospital pharmacists enjoy a more favorable environment, which permits them to have complete control over the supply of medicines. Further more the medical doctors practicing in government hospitals did not

provide pharmacy services to their patients, in contrast to their counterparts in the community practice (Wong, 2001). This scenario gave the opportunity for the hospital pharmacists to engage in more patient care activities.

With respect to the effect of the respondents' characteristics and type of practice setting on their perceptions of the importance and competence to perform all the four of the current pharmacy practice, only three variables, namely, their age, year of graduation, duration of service showed a significant results. It seems that those hospital pharmacy respondents who were older than 45 years old, graduated before 1990, and had service more than 20 years showed a higher rating of their perceptions. Across the board, the respondents from the hospital pharmacy setting scored higher responses compared to their counter part in the community pharmacy setting. These observations confirmed the condition that the pharmacy education and practice had evolved over the years and transformed from the traditional practice to a more clinically oriented practice. These may explained other partially or totally the reasons for the high rating given by those respondents. The change in the pharmacy curriculum over the years and the difference in the practice environment between hospital and community pharmacy settings may contribute to the findings (Ab Rahman and Bahari, 2002).

#### CONCLUSION:

The study findings concluded that, both the hospital and community pharmacy respondents indicated that carrying out management, dispensing, patient care, and public health activities were important and they were competent to carry out these activities. However, the hospital pharmacy respondents showed higher perceptions of the importance and competence to the most of the current pharmacy practice activities compared to their

counterparts in community pharmacy settings. Whereas less than 50% of community pharmacy respondents indicated that they were competent to practice the dispensing activities and agreed about its importance. In addition, among all socio-demographic characteristics and practice profile variables of the respondents only the age groups, years of graduation, and duration of service showed significant effect of the general importance perception and competence to current pharmacy practice activities. Whereas the hospital pharmacy respondents who were older than 45 years old, graduated before 1990, and had served more than 20 years showed higher rating of their perceptions.

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