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Survey of attitudes towards career choice among pharmacy students: A pilot study at a private university in Japan

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Abstract

Background: Since 2006, a six-year pharmacy programme focused on training students in pharmacy practice has been conducted in Japan. The attitudes of the six-year pharmacy students toward career choice are unclear because the programme is relatively new. In this survey, we explored the attitudes toward career choice in students at a private pharmacy college to assist them in their search for a suitable position after graduation.

Methods: A cross-sectional, self-administered survey was given to 405 pharmacy students enrolled in their final year at Musashino University, Tokyo, Japan.

Results: The top three influences excluded elective classes for intended career decision were the 'hospital pharmacy training', 'community pharmacy training', and 'outside job fairs'. The major three third party influences for final career decision were 'own interests', 'recruiters', and 'friends'.

Conclusion: Training at community and hospital pharmacy are crucial programme considerations towards future careers for many students. Educators, including pharmacists and personnel at practice sites need to understand how their activities can influence the future career choice of students.

Keywords: *Attitude Towards Work, Career Choice, Career Preference, Influencing Factor, Intended Career, Pharmacy Student*

Introduction

The six-year pharmacy programme, focusing on practical pharmaceutical care, includes practical training on-site and was started in 2006 in Japan. The traditional four-year pharmacy programme to train pharmacists was abolished as it did not include practical pharmacy training and transferred to the six-year programme. According to the Council on Pharmaceutical Education in Japan, of the first three cohorts who completed the six-year pharmacy programme (students who enrolled for their sixth year in April 2011–2013 graduated in March 2012–2014, respectively), 40% went to work as community pharmacists, 30% became hospital pharmacists, 12% went to work in a pharmaceutical related industry, 8% became drug wholesalers or retailers, and 12% pursued other areas of interest (modified based on the documents) (Ministry of Health, Labour and Welfare, 2013; Ministry of Education, Culture, Sports, Science and Technology, 2015). Pharmacists play an important professional roles in the healthcare sector in areas such as community pharmacies, hospital pharmacies, pharmaceutical related industrial positions, and the public service (Ministry of Health, Labour and Welfare, 2012).

In our previous studies, we reported on the "work attitudes" of community pharmacists (Nakagomi *et al*., 2011) and hospital pharmacists (Nakagomi *et al*., 2013), which has provided helpful information for graduating pharmacy students. More than 95% of hospital and community pharmacists in our previous studies indicated they were satisfied with their jobs, a higher positive job satisfaction level than for other ordinary employees (Nakagomi, *et al*., 2011; Nakagomi *et al*., 2013).

Pharmacy students are deciding their future professional career depending on their socio-economic and health care systems all over the world (Capstick *et al*., 2007). There have been several previous international attitude surveys conducted on pre-career pharmacy students (Besier & Jang, 1992; Savage *et al*., 2008; Kirby-Smith *et al*., 2008; Beall & Woolley, 2009; Hasan *et al*., 2010; Saad *et al*., 2012; Ubaka *et al*., 2013; Shen *et al*., 2014; Yousif *et al*., 2014; Saleh *et al*., 2015). These studies also examined career preferences on graduation and the factors that influenced these final career choices. However, there have been few studies that have examined the future career aspirations of the six-year pharmacy students in Japan because this is a relatively new development, as it

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has only been since 2006 that pharmacy students have been required to complete a six-year pharmacy programme. This new programme has focused more on pharmacy work and clinical practice as the primary pharmacist activities. However, some of these new pharmacy graduates have still chosen various occupations in the pharmaceuticals field (Ministry of Health, Labour and Welfare, 2013; Ministry of Education, Culture, Sports, Science and Technology, 2015).

This study aimed to explore the final-year private pharmacy school student attitudes toward their future careers, including their degree of satisfaction with the job search and the outcome of these searches. Our expectation is that the results of this study could provide a valuable resource for students attempting to make a rational occupational choice and for faculties advising their students on their future careers.

Method

A questionnaire focused on the attitudes of pharmacy students regarding their search for a position, and the final outcomes of those searches was prepared. The questionnaire was prepared by considering some of our previous studies about the work attitudes observed in community and hospital pharmacists. Furthermore, some factors relating to the daily life of students which may affect their job search and decision, were also added. This cross-sectional, self-administered survey was designed to be easy to answer and was based on pre-determined and categorised answers. The questionnaire consisted of nine major items: (1) gender; (2) intended career (before job search) (21 categories); (3) final career decision (after the job search) (21 categories); (4) reason for unmatched intentions and final career decision (9 categories) (conducted only in 2013); (5) most important consideration for career choice (14 categories); (6) impression of practical training (7 categories); (7) factors that affected the choice of career before the job search (required classes, elective classes, career support, influence of third parties) (21 categories, a six-point Likert scale ranging from 0: useless to 5: very useful); (8) factors that affected the final career decision after the job search (third parties) (8 categories, a six-point Likert scale ranging from 0: useless 5: very useful); and (9) the degree of satisfaction (out of 100 points) with the final outcomes of their job search. The career intention and the final career decision's 21 categories were integrated into five groups: community pharmacy, hospital pharmacy, industry position (pharmaceutical industry, contract research organisation, cosmetic industry, and others), public service position (national/local government officer), and graduate school. Implementation of this survey was approved by Career Committee under Faculty of Pharmacy, Muashino University.

There were 405 pharmacy students enrolled in the final-year (sixth grade) at Musashino University in 2011–13 (2012–2014 graduates). The survey was conducted each year in December from 2011 to 2013 after the students had completed their job search. Students were advised that participation in the survey was voluntary and that data would only be used for research and educational purposes. The completed answer sheets were sent to ESUMI Co., Ltd. (Tokyo) for data processing. The data were input using a double entry system, and the input data and original data were confirmed using a double-check system. Depending on the data type, the survey data were tested with a *t*-test, *chi*-square-tests, the Wilcoxon rank sum test (U-test), the Kruskal–Wallis test, and Spearman's rank correlation coefficient (SPSS 18.0J (Japanese) for Windows and EXCEL Enquête (Questionnaire) TAIKOU Ver.5.0 by ESUMI Co.). A *p*-value of less than 0.05 was defined as statistically significant a *priori*.

Results

Fixed data

The samples completed the three main items, gender, career intention, and final career decision on graduation were defined as fixed data. The fixed data number was 295, and 72.8% (male 30.2% and female 69.8%) of the 405 enrolled students (final-year students, 2011–2013). The number of effective data for each question varied, and missing or uncertain responses were excluded.

Career intention and final career choice

Careers which students desired before job search were defined as 'career intention, 'intended career', or 'intention career'. Careers which students decided after job hunting were defined as 'final career choice', 'final career decision', or 'final decision career'.

The career intentions and final career decisions of the respondents are shown in Table I: Career intentions before starting the job search were 'industry position' (37.1%), 'hospital pharmacy' (29.2%), 'community pharmacy' (21.3%), 'public service' (9.0%), and 'graduate school' (3.4%) for the male respondents, and 'community pharmacy' (40.3%), 'industry position' (29.1%), 'hospital pharmacy' (24.8%), and 'public service' (5.8%) for the female respondents.

Final career decisions after the completion of the job search was 'community pharmacy' (42.7%), 'industry position' (24.7%), 'hospital pharmacy' (23.6%), 'public service' (4.5%), and 'graduate school' (4.5%) for the male respondents, and 'community pharmacy' (53.9%), 'hospital pharmacy' (22.3%), 'industry position' (20.4%), 'public service' (2.9%), and 'graduate school' (0.5%) for female respondents. As a whole, the percentage of respondents who finally decided on 'community pharmacy' and 'graduate school' increased compared with the nominated career intention. On the other hand, the percentage of respondents who finally decided to work in a 'hospital pharmacy', in an 'industry', and in a 'public service position was lower than shown in the career intentions.

Table I: Career intention and final career decision

Career sector	Career intention before job search						Final career decision on completing job search					
	Total N=295		Male N=89		Female N=206		Total N=295		Male N=89		Female N=206	
	n	%	n	%	n	%	n	%	n	%	n	%
Community pharmacy	102	34.6	19	21.3	83	40.3	149	50.5	38	42.7	111	53.9
Hospital pharmacy	77	26.1	26	29.2	51	24.8	67	22.7	21	23.6	46	22.3
Industry	93	31.5	33	37.1	60	29.1	64	21.7	22	24.7	42	20.4
Public service	20	6.8	8	9.0	12	5.8	10	3.4	4	4.5	6	2.9
Graduate school	3	1.0	3	3.4	0	0.0	5	1.7	4	4.5	1	0.5

Intended career changed or unchanged

Approximately 70% of respondents felt that they would be fulfilled by their intended career. However, 27.8% (30.3% of males and 26.7% of females) of the respondents changed their intended occupation after their job search (Table II). Two major reasons for these changes (examined only in 2013) were attributed to 'results of self-searching or self-analysis' (42.1%) and 'impact of practical training in community and hospital pharmacies' (21.1%) (Table III).

Table II: Intended career changed/unchanged and final career decision

Intention career changed	Total N=295		Gender Male N=89		Female N=206	
	n	%	n	%	n	%
Changed	82	27.8	27	30.3	55	26.7
Unchanged	213	72.2	62	69.7	151	73.3

Table III: Reason for changed intended career toward final career decision

Items/categories	Total N=38		Gender Male N=10		Female N=28	
Changed intention career because of	n	%	n	%	n	%
deep consideration/self-analysis	16	42.1	4	40.0	12	42.9
practical training	8	21.1	2	20.0	6	21.4
meeting recruiters	5	13.2	0	0.0	5	17.9
not receiving job offer from intended career	4	10.5	2	20.0	2	7.1
others	3	7.9	2	20.0	1	3.6
professors/instructors influence	2	5.3	0	0.0	2	7.1
parents influence	0	0.0	0	0.0	0	0.0
friends influence	0	0.0	0	0.0	0	0.0
seniors influence	0	0.0	0	0.0	0	0.0

conducted only in 2013

Accomplishment rate of students who achieved intended career

All the 'graduate school' expectants achieved their goal while 92.2% of respondents who indicated an intention to work in a 'community pharmacy' achieved their goal after the job search was completed. However, for other professions, the achievements were a little lower with 67.5% of respondents, who indicated an intention to work in a 'hospital pharmacy' achieving their goal, 62.4% of the 'industry' expectants achieving their goal, and 30.0% of 'public service' expectants achieving their goal (Table IV).

Rate of students who desired intention career in final decision career

The percentage of students seeking the same career sector in their final career decision was 90.6% for 'industry', 77.6% for 'hospital pharmacy', 63.1% for 'community pharmacy', 60.0% for 'public service', and 'graduate school' each. The expectation rate for those wishing to go to a 'community pharmacy' was 44.7% for males, and 69.4% for females, which was a lower proportion than that for any other occupation (Table V).

Most important consideration for career choice

Table VI shows the most important consideration for career choice by gender and final career decision. The five major considerations were as follows: 'Opportunity for personal development' was chosen by 29.6% of respondents (males: 37.1%, females: 26.3% and industry position: 50.8%, graduate school: 40.0%, hospital pharmacy: 38.8%, public service: 20.0%, community pharmacy: 16.8%). 'Practical utilisation of pharmacist license' was chosen by 13.3% (males: 12.4%, females: 13.7% and community pharmacy: 17.4%, hospital pharmacy: 16.4%, public service: 10.0%, industry position: 1.6%, graduate school: 0.0%). The 'desire to work in the health care field' was chosen by 11.9% (males: 6.7%, females: 14.1% and hospital pharmacy: 25.4%, graduate school: 20.0%, community pharmacy: 8.1%, industry position: 7.9%, public service: 0.0%). 'Employment terms and conditions' was chosen by 10.9% (males: 9.0%, females: 11.7% and public service: 30.0%, community pharmacy: 16.8%, hospital pharmacy: 4.5%,

Table IV: Intended career to final career decision

Intention career (I)	Total	Gender		Final career decision (F)	Total		Gender			
		Male	Female				Male		Female	
	n	n	n		n	F/I (%)	n	(%)	n	(%)
Community pharmacy	102	19	83	Community pharmacy	94	92.2	17	89.5	77	92.8
Hospital pharmacy	77	26	51	Hospital pharmacy	52	67.5	19	73.1	33	64.7
Industry	93	33	60	Industry	58	62.4	20	60.6	38	63.3
Public service	20	8	12	Public service	6	30.0	3	37.5	3	25.0
Graduate school	3	3	0	Graduate school	3	100.0	3	100.0	0	0.0
Total	295	89	206		213	72.2	62	69.7	151	73.3

Table V: Final career decision from intended career

Final career decision (F)				Intention career (I)						
	Total	Gender			Total		Gender			
		Male	Female				Male		Female	
	n	n	n		n	I/F (%)	n	(%)	n	(%)
Community pharmacy	149	38	111	Community pharmacy	94	63.1	17	44.7	77	69.4
Hospital pharmacy	67	21	46	Hospital pharmacy	52	77.6	19	90.5	33	71.7
Industry	64	22	42	Industry	58	90.6	20	90.9	38	90.5
Public service	10	4	6	Public service	6	60.0	3	75.0	3	50.0
Graduate school	5	4	1	Graduate school	3	60.0	3	75.0	0	0.0
Total	295	89	206		213	72.2	62	69.7	151	73.3

Table VI: Most important consideration for career choice

Consideration	Total		Gender				Final career decision									
			Male		Female		Community pharmacy		Hospital pharmacy		Industry		Public service		Graduate school	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Opportunity for personal development	87	29.6	33	37.1	54	26.3	25	16.8	26	38.8	32	50.8	2	20.0	2	40.0
Practical utilization of pharmacist license	39	13.3	11	12.4	28	13.7	26	17.4	11	16.4	1	1.6	1	10.0	0	0.0
Desire to work in health care field	35	11.9	6	6.7	29	14.1	12	8.1	17	25.4	5	7.9	0	0.0	1	20.0
Employment terms and conditions	32	10.9	8	9.0	24	11.7	25	16.8	3	4.5	1	1.6	3	30.0	0	0.0
Policy and mission	27	9.2	5	5.6	22	10.7	22	14.8	2	3.0	3	4.8	0	0.0	0	0.0
Others	24	8.2	9	10.1	15	7.3	10	6.7	1	1.5	10	15.9	2	20.0	1	20.0
Salary	16	5.4	9	10.1	7	3.4	10	6.7	0	0.0	6	9.5	0	0.0	0	0.0
Employee training system	13	4.4	4	4.5	9	4.4	10	6.7	3	4.5	0	0.0	0	0.0	0	0.0
Convenient commute	8	2.7	2	2.2	6	2.9	4	2.7	2	3.0	1	1.6	1	10.0	0	0.0
Continuous learning	5	1.7	1	1.1	4	2.0	2	1.3	2	3.0	0	0.0	0	0.0	1	20.0
Recommendation from senior or friend	4	1.4	1	1.1	3	1.5	1	0.7	0	0.0	2	3.2	1	10.0	0	0.0
Easy work	2	0.7	0	0.0	2	1.0	1	0.7	0	0.0	1	1.6	0	0.0	0	0.0
Listed organization	2	0.7	0	0.0	2	1.0	1	0.7	0	0.0	1	1.6	0	0.0	0	0.0
Well-known large business scale	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	294	100.0	89	100.0	205	100.0	149	100.0	67	100.0	63	100.0	10	100.0	5	100.0

Table VII: Impression of practical training (multiple answer)

Items/categories	Total		Gender				Final career decision									
			Male		Female		Community pharmacy		Hospital pharmacy		Industry		Public service		Graduate school	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Could have opportunity for personal development	144	50.0	39	45.3	105	52.0	75	51.7	38	58.5	25	39.7	4	40.0	2	40.0
Could be involved in health care	111	38.5	29	33.7	82	40.6	47	32.4	36	55.4	20	31.7	5	50.0	3	60.0
Could have continuous learning	32	11.1	11	12.8	21	10.4	15	10.3	9	13.8	7	11.1	1	10.0	0	0.0
Easy work	5	1.7	2	2.3	3	1.5	1	0.7	1	1.5	3	4.8	0	0.0	0	0.0
Hard work	19	6.6	4	4.7	15	7.4	7	4.8	6	9.2	4	6.3	2	20.0	0	0.0
Difficulty of human relationship at the work place	85	29.5	25	29.1	60	29.7	48	33.1	21	32.3	14	22.2	2	20.0	0	0.0
Others	14	4.9	3	3.5	11	5.4	4	2.8	1	1.5	8	12.7	1	10.0	0	0.0
Number of samples	288		86		202		145		65		63		10		5	

Table VIII: Factors influencing intended and final career decision by gender

Influencing factors	Total			Gender						
				Male			Female			M vs F
	n	m.w.s.	s.d.	n	m.w.s.	s.d.	n	m.w.s.	s.d.	p value
Intended career										
Required class										
Hospital pharmacy training	293	4.41	1.01	88	4.08	1.33	205	4.56	0.79	0.003
Community pharmacy training	293	4.29	1.11	88	4.00	1.30	205	4.41	0.99	0.006
Career design 1	283	2.96	1.36	85	3.02	1.47	198	2.94	1.31	0.473
Elective class										
Internship (industry)	69	4.28	1.15	25	4.00	1.32	44	4.43	1.02	0.150
Career design 2	128	3.61	1.36	45	3.71	1.34	83	3.55	1.37	0.541
Clinical research development	26	3.54	1.17	12	2.92	1.16	14	4.07	0.92	0.014
Pharmaceutical industry	68	3.29	1.27	28	3.36	1.25	40	3.25	1.30	0.588
Community pharmacy management	40	3.25	1.17	17	3.29	1.36	23	3.22	1.04	0.676
Pharmaceutical manufacturing	46	3.00	1.28	18	2.72	1.41	28	3.18	1.19	0.179
Cosmetic industry	72	2.75	1.21	21	2.29	1.49	51	2.94	1.03	0.096
Job search support										
Outside job fair	280	4.23	0.98	85	3.96	1.28	195	4.34	0.80	0.053
In-house job fair	283	4.02	1.11	86	3.85	1.27	197	4.09	1.03	0.186
In-house job seminar	264	3.47	1.19	80	3.53	1.24	184	3.44	1.16	0.446
Third party influences										
Friends	289	3.82	1.09	87	3.72	1.30	202	3.86	0.98	0.819
Media	272	3.32	1.27	86	3.26	1.27	186	3.34	1.27	0.495
Seniors	269	3.28	1.57	82	3.12	1.56	187	3.34	1.58	0.183
Parents	285	3.22	1.49	86	3.06	1.43	199	3.30	1.52	0.129
Professors or instructors	269	3.22	1.54	85	3.28	1.52	184	3.18	1.56	0.660
In-house career advisers	233	2.06	1.74	70	2.34	1.69	163	1.94	1.75	0.122
Influences on final career choice										
Third party influences										
Own interests	295	4.61	0.69	89	4.54	0.93	206	4.64	0.56	0.915
Recruiters	290	3.53	1.40	88	3.11	1.65	202	3.71	1.25	0.005
Friends	287	2.98	1.45	86	2.98	1.56	201	2.98	1.41	0.807
Media	267	2.67	1.54	81	2.56	1.48	186	2.72	1.57	0.363
Parents	290	2.67	1.59	89	2.34	1.54	201	2.81	1.59	0.010
Seniors	274	2.45	1.65	84	2.40	1.69	190	2.46	1.64	0.806
Professors or instructors	284	2.36	1.57	87	2.37	1.64	197	2.36	1.54	0.968
In-house career advisers	228	1.48	1.55	75	1.73	1.61	153	1.36	1.51	0.103

m.w.s.: mean weighted score (score 0-5 median=2.5) s.d.: standard deviation

p-value: Wilcoxon rank sum test (U-test) : $p < 0.05$

industry position: 1.6%, graduate school: 0.0%). 'Policy and mission of employer' was chosen by 9.2% (males: 5.6%, females: 10.7% and community pharmacy: 14.8%, industry position: 4.8%, hospital pharmacy: 3.0%, public service and graduate school: 0.0%).

Impression of practical training

Practical training in community and hospital pharmacies was introduced as mandatory subjects in the six-year pharmacy programme. The practical training was conducted for 11 weeks at community and hospital pharmacy respectively in the fifth year of the program. After the practical training, the top five impressions regarding the training programme (multiple answer) were found to be 'self-development' (50.0%, male: 45.3%, female: 52.0%, hospital pharmacy: 58.5%, community pharmacy: 51.7%, public service and graduate school: 40.0%, industry position: 39.7%); 'can be involved in health care' (38.5%, male: 33.7%, female: 40.6%, graduate school: 60.0%, hospital pharmacy: 55.4%, public service: 50.0%, community pharmacy: 32.4%, industry position: 31.7%); 'difficulty of human relationship at the work place' (29.5%, male: 29.1%, female: 29.7%, community pharmacy: 33.1%, hospital pharmacy: 32.3%, industry position: 22.2%, public service: 20.0%); 'continuation learning can be done' (11.1%, male: 12.8%, female: 10.4%, hospital pharmacy: 13.8%, industry position: 11.1%, community pharmacy: 10.3%, public service: 10.0%); and 'hard work' (6.6%, male: 4.7%, female: 7.4%, public service: 20.0%, hospital pharmacy: 9.2%, industry position: 6.3%, community pharmacy: 4.8%) (Table VII) .

Factors influencing intended and final career decision by gender

For exploring the factors that influenced the respondents' career intention and final career decision, three required classes, seven elective classes, three job search support sessions and several third party influences were investigated by gender (Table VIII) and by final career decision (Table IX).

For the intended occupation, the rating for all influence factors was over the median 2.5, except for the 'cosmetic industry' in the elective class for males and 'in-house career advisers' in third party influences for both males and females (Table VIII). As a whole, for the top five, the mean weighted scores (m.w.s.) of influence for the career intention were 4.41 ('hospital pharmacy training'), 4.29 ('community pharmacy training'), 4.28 ('internship (industry)'), 4.23 ('outside job fair'), and 4.02 ('in-house job fair'). 'Hospital pharmacy training' (p=0.003), and 'community pharmacy training' (p=0.006), which were mandatory six month courses in the six-year pharmacy programme, and 'clinical research development' (p=0.014) in the elective class were found to significantly affect the career intention of females rather than males. There were no differences regarding the other factors that affected career intention between males and females.

The rating of the influencing factors on the final career choice after completing the job search were found to be primarily third party and were above the median (2.5), except for 'seniors', 'professors or instructors', and 'in-house career advisers' for both males and females and 'parents' for males (Table VIII). Following 'own interests' was the highest m.w.s. at 4.61 for both, 4.54 for males, and 4.64 for females. Females were more affected by 'recruiters' (p=0.005), and 'parents' (p=0.010) than males when deciding on their final career. For the other factors, no differences were found between males and females.

Factors influencing intended and final career decision by final career decision

Differences between the influencing factors in each career sector are shown in Table IX. 'Community pharmacy training' was found to have a significantly greater influence on the students who chose 'community pharmacy' as their final career sector (m.w.s.: 4.46) than those who chose 'industry' (m.w.s.: 3.91) (p=0.011). 'Hospital pharmacy training' also significantly affected respondents who chose 'hospital pharmacy' as their final career sector (m.w.s.: 4.69) rather than 'industry' (m.w.s.: 4.14) (p=0.009). Differences between the influences on 'community pharmacy' and 'industry' were found in some of the elective classes that had focused on occupations in 'industry such as 'internships (industry)' (m.w.s.: 3.53, 4.75, respectively) (p=0.001), 'career design 2 (study company profile)' (m.w.s.: 3.37, 4.09, respectively) (p=0.006), 'clinical research development' (m.w.s.: 2.67, 4.08, respectively) (p= 0.020), and 'pharmaceutical industry (overview)' (m.w.s.: 2.64, 4.00, respectively) (p=0.003).

For the influence of third party before the job search, a distinction was also found between 'community pharmacy' and 'industry' for 'friends' (m.w.s.: 3.65, 4.23) (p=0.000), 'media' (m.w.s.: 3.10, 3.79) (p=0.002), 'seniors' (m.w.s.: 2.93, 4.05) (p = 0.000), and 'professors or instructors' (m.w.s.: 2.77, 3.56) (p=0.000). 'Professors or instructors' had less impact on 'community pharmacy' (m.w.s.: 2.77) in comparison with 'hospital pharmacy' (m.w.s.: 3.69) (p=0.000), 'industry' (m.w.s.: 3.56) (p=0.001), and 'graduate school' (m.w.s.: 5.00) (p= 0.000).

When the pharmacy students made the final career decision after the completion of their job search, there were several distinguishing factors depending on the occupation. 'Community pharmacy' were not affected by 'friends' (m.w.s.: 2.83) (p=0.044), 'seniors' (m.w.s.: 2.29) (p=0.039), or 'professors or instructors' (m.w.s.: 1.91) (p=0.046) compared with 'industry' (m.w.s.: 3.40, 2.97, 2.61). 'Hospital pharmacy' were influenced more by 'professors or instructors' (m.w.s.: 2.94) (p=0.000) and 'parents' (m.w.s.: 3.18) (p=0.016) than 'community pharmacy' (m.w.s.: 1.91, 2.46, respectively). 'Professors or instructors' influenced 'graduate school' (m.w.s.: 5.00) more than any other final career decisions, such as 'community pharmacy' (m.w.s.: 1.91) (p=0.001),

Table IX: Factors influencing intended and final career decision by final career decision

Influencing factors	Final career decision															Difference among final career decision									
	Community pharmacy (C)			Hospital pharmacy (H)			Industry (I)			Public service (P)			Graduate school (G)			C vs H	C vs I	C vs P	C vs G	H vs I	H vs P	H vs G	I vs P	I vs G	P vs G
	n	m.w.s	s.d.	n	m.w.s	s.d.	n	m.w.s	s.d.	n	m.w.s	s.d.	n	m.w.s	s.d.	p value									
Intended career																									
Required class																									
Hospital pharmacy training	147	4.41	1.01	67	4.69	0.76	64	4.14	1.21	10	4.40	0.84	5	4.40	0.55	0.366	0.728	1.000	1.000	0.009	1.000	0.859	1.000	1.000	1.000
Community pharmacy training	147	4.46	0.92	67	4.36	1.15	64	3.91	1.37	10	4.20	0.92	5	3.40	1.14	1.000	0.011	1.000	0.133	0.112	1.000	0.262	1.000	1.000	1.000
Career design 1 (focus occupation)	139	2.91	1.27	66	2.80	1.37	64	3.30	1.47	9	3.22	1.39	5	2.00	1.58	1.000	0.249	1.000	1.000	0.345	1.000	1.000	1.000	0.736	1.000
Elective class																									
Internship (industry)	19	3.53	1.54	16	4.19	1.05	32	4.75	0.62	2	4.50	0.71	0	NA	NA	1.000	0.001	1.000	-	0.236	1.000	-	1.000	-	-
Career design 2 (focus industry)	54	3.37	1.25	20	3.45	1.47	47	4.09	1.33	5	2.40	1.34	2	3.50	0.71	1.000	0.006	1.000	1.000	0.694	1.000	1.000	0.038	1.000	1.000
Clinical research development	9	2.67	1.32	5	3.80	0.84	12	4.08	0.79	0	NA	NA	0	NA	NA	0.190	0.020	-	-	1.000	-	-	-	-	-
Pharmaceutical industry (review)	25	2.64	1.44	13	3.15	0.99	27	4.00	0.88	2	2.50	0.71	1	4.00	0.00	1.000	0.003	1.000	1.000	0.171	1.000	1.000	0.470	1.000	1.000
Community pharmacy management	25	3.36	1.11	7	3.14	1.07	8	3.00	1.51	0	NA	NA	0	NA	NA	1.000	1.000	-	-	1.000	-	-	-	-	-
Pharmaceutical manufacturing	19	2.53	1.22	8	3.13	1.25	16	3.44	1.26	3	3.33	1.53	0	NA	NA	1.000	0.285	1.000	-	1.000	1.000	-	1.000	-	-
Cosmetic industry	32	2.53	1.29	13	3.00	0.82	22	3.14	1.17	2	2.00	0.00	3	1.67	1.53	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Job search support																									
Outside job fair	141	4.27	0.96	65	3.94	1.07	62	4.55	0.72	10	4.00	0.67	3	2.00	2.83	0.134	0.443	1.000	0.787	0.002	1.000	1.000	0.095	0.275	1.000
In-house job fair	140	4.08	1.00	67	3.85	1.18	63	4.25	1.05	10	3.50	1.43	3	1.67	1.53	1.000	1.000	1.000	0.061	0.237	1.000	0.164	0.750	0.053	1.000
In-house job seminar	130	3.49	1.09	62	3.44	1.10	60	3.52	1.41	9	3.44	1.13	3	2.00	2.00	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Third party influences																									
Friends	145	3.65	1.08	66	3.83	1.05	64	4.23	1.03	10	3.40	1.26	4	4.00	0.82	1.000	0.000	1.000	1.000	0.075	1.000	1.000	0.188	1.000	1.000
Media	135	3.10	1.34	61	3.34	1.08	62	3.79	1.22	10	3.10	0.99	4	3.25	1.26	1.000	0.002	1.000	1.000	0.052	1.000	1.000	0.323	1.000	1.000
Seniors	138	2.93	1.60	59	3.36	1.62	60	4.05	1.20	8	2.75	1.28	4	3.25	1.50	0.546	0.000	1.000	1.000	0.120	1.000	1.000	0.054	1.000	1.000
Parents	142	2.96	1.52	66	3.58	1.28	63	3.46	1.45	10	3.60	1.71	4	2.00	2.31	0.039	0.265	0.782	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Professors or instructors	130	2.77	1.48	65	3.69	1.29	59	3.56	1.58	10	3.00	2.11	5	5.00	0.00	0.000	0.001	1.000	0.004	1.000	1.000	0.074	1.000	0.107	0.380
In-house career advisers	111	1.90	1.62	55	2.31	1.76	54	2.20	1.91	9	1.44	1.81	4	2.50	2.08	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Influences on final career																									
Third party influences																									
Own interests	149	4.57	0.73	67	4.43	0.82	64	4.83	0.38	10	4.80	0.42	5	5.00	0.00	1.000	0.120	1.000	1.000	0.004	1.000	0.566	1.000	1.000	1.000
Recruiters	147	3.56	1.34	65	3.37	1.52	64	3.83	1.35	10	2.10	1.20	4	3.50	1.29	1.000	0.658	0.007	1.000	0.459	0.056	1.000	0.002	1.000	0.955
Friends	145	2.83	1.44	65	2.95	1.42	63	3.40	1.47	10	2.30	1.42	4	4.00	0.82	1.000	0.044	1.000	0.864	0.455	1.000	1.000	0.268	1.000	0.493
Media	133	2.66	1.51	61	2.48	1.42	61	3.03	1.65	10	1.50	1.43	2	4.00	1.41	1.000	0.637	0.258	1.000	0.188	0.589	1.000	0.092	1.000	0.791
Parents	146	2.46	1.57	66	3.18	1.49	63	2.54	1.67	10	3.10	1.10	5	2.60	1.82	0.016	1.000	1.000	1.000	0.255	1.000	1.000	1.000	1.000	1.000
Seniors	139	2.29	1.56	61	2.39	1.75	61	2.97	1.70	9	1.33	1.32	4	3.25	0.50	1.000	0.039	0.670	1.000	0.567	0.855	1.000	0.094	1.000	0.225
Professors or instructors	141	1.91	1.47	66	2.94	1.37	62	2.61	1.64	10	2.00	1.49	5	5.00	0.00	0.000	0.046	1.000	0.001	1.000	0.378	0.010	1.000	0.011	0.040
In-house career advisers	111	1.45	1.52	51	1.65	1.51	54	1.33	1.65	10	1.30	1.34	2	4.00	1.41	1.000	1.000	1.000	0.459	1.000	1.000	0.602	1.000	0.520	0.578

m.v.s.: mean weighted score (score 0-5 median=2.5)
s.d.: standard deviation
p value: Wilcoxon rank sum test (U-test)
: $p < 0.05$

Table X: Satisfaction scores of final outcomes of job search

	Total				Final career decision																	
					Community pharmacy				Hospital pharmacy				Industry				Public service				Graduate school			
Gender	n	mean score	s.d.	*p* value	n	mean score	s.d.	*p* value	n	mean score	s.d.	*p* value	n	mean score	s.d.	*p* value	n	mean score	s.d.	*p* value	n	mean score	s.d.	*p* value
Male	85	78.2	24.8	0.024	36	70.8	31.0	0.023	21	81.2	22.2	0.454	21	84.5	14.2	0.490	4	85.0	5.8	0.011	3	93.3	11.5	0.637
Female	199	86.1	14.3		107	85.2	14.7		45	85.6	14.8		40	87.3	12.9		6	98.3	4.1		1	90.0	0.0	
Total	284	83.8	18.4		143	81.6	20.9		66	84.2	17.4		61	86.3	13.3		10	93.0	8.2		4	92.5	9.6	

m.w.s.: mean weighted score (score 0-5 median=2.5) s.d.: standard deviation

p-value: Wilcoxon rank sum test (U-test) : $p<0.05$

Table XI: Satisfaction difference for final career decision

	Difference for final career decision									
Comparison between final career decision	Community pharmacy	Community pharmacy	Community pharmacy	Community pharmacy	Hospital pharmacy	Hospital pharmacy	Hospital pharmacy	Industry	Industry	Public service
	Hospital pharmacy	Industry	Public service	Graduate school	Industry	Public service	Graduate school	Public service	Graduate school	Graduate school
p-value	1.000	1.000	0.612	1.000	1.000	0.914	1.000	1.000	1.000	1.000

p-value: Wilcoxon rank sum test (U-test) with Bonferroni correction

Table XII: Satisfaction scores of final outcomes from intended career to final career decision

			Total			Gender						
						Male			Female			M vs F
Intention career	n	Final career decision	n	m.w.s.	s.d.	n	m.w.s.	s.d.	n	m.w.s.	s.d.	p value
*Community pharmacy	97	Community pharmacy	89	85.0	18.4	15	72.0	30.7	74	87.6	13.6	0.036
		Others	8	85.0	22.0	2	95.0	7.1	6	81.7	24.8	0.719
*Hospital pharmacy	75	Hospital pharmacy	51	84.7	16.8	19	79.2	22.4	32	88.0	11.6	0.123
		Others	24	86.2	13.0	7	87.1	12.5	17	85.8	13.5	0.974
*Industry	91	Industry	56	86.8	12.6	19	84.5	14.1	37	87.9	11.7	0.405
		Others	35	75.9	22.9	13	69.2	30.3	22	79.9	16.7	0.501
*Public service	19	Public service	6	91.7	9.8	3	83.3	5.8	3	100.0	0.0	0.034
		Others	13	68.8	30.0	5	62.0	44.4	8	73.1	19.1	0.880
*Graduate school	2	Graduate school	2	100.0	0.0	2	100.0	0.0	0	0.0	0.0	N.A.
		Others	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	N.A.
Total	284		284	83.8	18.4	85	78.2	24.8	199	86.1	14.3	0.024
**Others (including above categories)		Community pharmacy	54	76.0	23.7	21	70.0	31.9	33	79.9	16.0	0.647
		Hospital pharmacy	15	82.3	19.9	2	100.0	0.0	13	79.6	20.0	0.080
		Industry	5	81.8	21.5	2	85.0	21.2	3	79.7	26.1	0.564
		Public service	4	95.0	5.8	1	90.0	0.0	3	96.7	5.8	0.317
		Graduate school	2	85.0	7.1	1	80.0	0.0	1	90.0	0.0	0.317

** extracted from * s.d.: standard deviation

p-value: Wilcoxon rank sum test (U-test) : $p<0.05$

'hospital pharmacy' (mw.s.: 2.94) (p=0.010), 'industry' (m.w.s.: 2.61) (p=0.011), and 'public service' (m.w.s.: 2.00) (p=0.040). As a whole, the respondents 'own interests' were found to have the highest influence, which was significant for 'hospital pharmacy' (m.w.s.: 4.43) and 'industry' (m.w.s.: 4.83) (p=0.004).

Satisfaction scores of final outcomes of job search

Satisfaction regarding the job search results and the final career decision ranged from 81.6 points for 'community pharmacy' to 93.0 points for the 'public service' (Table X); however, there were no significant differences among the occupations (Table XI). The average satisfaction score was 83.8 points for all respondents, 78.2 points for males,

and 86.1 points for females, with the female average being significantly higher than that of the male (p=0.024). The highest score was 98.3 points for females whose final career decision was the 'public service', and the lowest score was 70.8 points for males whose final career decision was 'community pharmacy'.

There were differences of satisfaction score by the final career decision between gender in 'community pharmacy' (70.8 points for males, 85.2 points for females) (p=0.023) and 'public service' (85.0 points for males, 98.3 points for females) (p=0.011).

Satisfaction scores of final outcomes from intended career to final decision

Satisfaction scores of final outcomes from intended career to final decision were shown in Table XII. The combined satisfaction score comparisons from the career intention before the job search to make the final career decision were from 'public service' to 'other' (62.0 points.), from 'industry' to 'other' (69.2 points), from 'other' to 'community pharmacy' (70.0 points), and from 'community pharmacy' to 'community pharmacy' (72.0 points), which was lower than the average 78.2 points for males. Other statistics in this section were from 'public service' to 'other' (73.1 points), from 'other' to 'hospital pharmacy' (79.6 points), from 'other' to 'industry' (79.7 points), from 'industry' to 'other' (79.9 points), from 'other' to 'community pharmacy' (79.9 points), from 'community pharmacy' to 'other' (81.7 points), and from 'hospital pharmacy' to 'other' (85.8 points), which was lower than the average 86.1 points for females.

Differences between regarding satisfaction scores of final outcomes from intended career to final decision were found from 'community pharmacy' to 'community pharmacy' (72.0 points for males, 87.6 points for females) (p=0.036), and from 'public service' to 'public service' (83.3 points for males, 100.0 points for females) (p=0.034)

The relationship between satisfaction and final career decision was analysed using Spearman's rank correlation coefficient; however, the relationship was not recognised (η= 0.153).

Discussion

The ratio of males to females in this study was 30% to 70%; the proportion of female students was higher than in the recent pharmacy graduates in Japan (40% to 60%) (Ministry of Health, Labour and Welfare, 2013). The most popular occupation sectors in our study were 'community pharmacy' (50.5%), followed by 'hospital pharmacy' (22.7%) and 'industry' (21.7%) (Table I). Recently the graduates of private pharmacy school in Japan found jobs in 'community pharmacy' (45.7%), followed by 'hospital pharmacy' (28.8%) and 'industry (10.7%)'; public university 'hospital pharmacy' (39.4%) , followed by 'community pharmacy' (25.2%) and 'industry' (20.4%) (modified based on the documents) (Ministry of Health, Labour and Welfare, 2013; Ministry of Education, Culture, Sports, Science and Technology, 2015). Top of final career decision in private pharmacy school was 'community pharmacy' in Japan: in public university was 'hospital pharmacy'. In our result, 'community pharmacy' was the first position also like other Japanese private college of pharmacy. Our pharmacy school was relatively new (started in 2004), so that hospital pharmacy managers or hospital administrators were not familiar with our graduates as lack of recruiting records. As compared with students from an established pharmacy school, it was more competitive for our students to join 'hospital pharmacy'. On the other hand, the location of our university in urban Tokyo was more conveniently accessible to many pharmaceutical companies and this was an advantage for our students as compared with students from local prefectural universities in Japan. Further, we offered several characterised elective classes focused on pharmaceutical industry such as 'pharmaceutical industry (review)', 'pharmaceutical manufacturing', 'clinical research development', 'internship (industry)', and 'career design 2 (focus industry)' in addition to pharmacy related required classes. It appears that these circumstances affected the lower proportion of respondents who chose 'hospital pharmacy' and the higher proportion of those who chose 'industry'.

There are some of overseas studies regarding preferable career of pharmacy graduates. Community pharmacies (chains and independent) (45.5%) and hospital pharmacies (27.6%) were found to be the most preferable working sectors in a United States study (Besier & Jang, 1992). An Australian study indicated that the highest career intention was in community pharmacies, followed by hospital pharmacies (Shen *et al*., 2014). These results are similar to our results and Japanese data.

More than 50% of pharmacy students in a South African study indicated that they would prefer to work in a hospital (Modipa, & Dambisya, 2008). A Nigerian study found that the most preferred occupations on graduation were in hospital practice (28.9%) and community pharmacy practice (26.9%) (Ubaka *et al*., 2013). Student career choices on graduation in the US were mainly focused in the retail chain sector, but these career preferences were changing toward more clinical settings (Savage *et al*., 2009). In contrast, pharmacy students in the United Kingdom tended to prefer a career with patient contact first of all (Kirby-Smith *et al*., 2008). Depending on health care system or infrastructure students may chose 'community pharmacy' or 'hospital pharmacy' for pharmacist activity.

Clinical pharmacy was found to be the preferred sector for a future career in Pakistani (Saad *et al*., 2012), Sudanese (Yousif *et al*., 2014), and Saudi Arabian (Saleh *et al*., 2015) studies; however, it was not clear whether clinical pharmacy practices had been established in those countries.

We have already described the different career preferences between public and private pharmacy schools in Japan. A Malaysian report stated that final-year students at public universities tended to select hospital pharmacy practice, while private university students chose community pharmacies as their first working sector after graduation (Hasan *et al*., 2010). This result is the same result as that of Japan.

The career aspirations of students differed by gender (Capstick *et al*., 2007; El-Hammadi, 2013). Female students were found to more often choose a career in a hospital pharmacy than males in a New Zealand study (Capstick *et al*., 2007). Our study suggests that twice as many females wished to pursue a career in a 'community pharmacy' than males, whereas males showed a higher preference for positions in 'industry' or a 'hospital pharmacy' than females. This may be attributed to the fact that females find familiar and preferable work conditions in a 'community pharmacy', that is, its being a field close to healthcare work, having flexible working conditions, work–life balance, or living adjustments. 'Industry' is an attractive field for males owing to the good pay obtained there and the variety of job opportunities available; 'hospital pharmacy' is also considered a attractive job site to work with many medical field professionals in Japan.

Although not top ranked, interest in industry positions after graduation ranked fairly high: 34% in South Africa (Modipa & Dambisya, 2008) and second rank in Pakistan (Saad *et al*., 2012) and the Malaysian private university (Hasan *et al*., 2010). In a Syrian study, community pharmacies and the pharmaceutical industry were the most preferable future careers for pharmacy students (El-Hammadi, 2013). Studies in the United Kingdom and Saudi Arabia found that interest in the pharmaceutical industry was lower than that in healthcare with direct patient contact, and it was recognised that the inclusion of pharmaceutical industry curriculum to highlight the benefits for students in these careers was needed (Saleh *et al*., 2015; Kirby-Smith *et al*., 2008). In our study, the ratio of respondents who indicated 'community pharmacy', 'hospital pharmacy', and 'industry position' as their intended career was 34.5%, 26.1%, and 31.5%, respectively, which was well balanced as our school offers elective classes related to the healthcare industry. Furthermore, our students seem to recognise that pharmacists' work in various fields in Japan, which may also affect their intended career. However, the ratio of respondents for the final career decision was somewhat different (Table I).

The most important consideration for career choice was the 'opportunity for personal development' (29.6%). 'Salary' (5.4%) was the lowest overall, with more male students indicating importance (10.1%) as indicated in Table VI. There have been several overseas studies that have examined important career consideration factors. Some studies have mentioned intrinsic factors as the more highly ranked factors, such as 'care for/help people' (Capstick *et al*., 2007), "service to the community (56% in government hospital and 50% in retail pharmacy)" (Modipa & Dambisya, 2008), 'personal interest' (Saad *et al*., 2012), 'personal fulfilment' (El-Hammadi, 2013) and 'job satisfaction' (Besier & Jang, 1992). Extrinsic factors were also highlighted as important job concerns, such as the 'work environment' (Savage *et al*., 2009), 'salary' (Hasan *et al*., 2010; DiDonato *et al*., 2012), 'salary and work environment' (Saleh *et al*., 2015) and 'advanced opportunities' (Ubaka et al., 2013). Interestingly, most studies, contrary to this study, have reported that 'salary' was the highest ranking consideration for career choice. The students in our study recognised that the starting wage in the community pharmacy sector was high; however, life-time earnings were not much higher compared with earnings in the industry sector. The starting salary for pharmacists in the industry is less than that for community or hospital pharmacists; however, the former could earn almost equal to the latter in the UK (Page, 2015). Contrary to this salary situation observed in Japan or UK, the mean annual salary of pharmaceutical sales representatives is less than that of pharmacists in the US (US Bureau of Labor Statistics, 2015). Thus, in Japan, 'opportunity for personal development' was the top ranking consideration for career choice, which is the same as that in our previous study on the work attitudes of hospital pharmacists (Nakagomi *et al*., 2011). The dedicated attitude of the pharmacy students and the hospital pharmacists are reflected in these results.

The required classes, 'hospital pharmacy training' and 'community pharmacy training', were highly rated career choice factors (Table VIII), and it was recognised that both these practical training courses affected career intentions strongly. Pharmacists at the practice sites should realise how much they can influence the students' future. Female students were found to be more strongly affected than the males, demonstrating that females were possibly more eager to take this pharmacy training seriously. A positive experience with practice sites was also found to be the high ranked factor for students in a US study (DiDonato *et al*., 2012). However, 'own interests' was the top ranking factor when deciding on a final career after the job search, which was similar to 'personal interest' (Saad *et al*., 2012). 'Parents' and 'recruiters' were found to be the key influences for females, possibly revealing their more positive listening disposition.

The influential factors on the final career choice are shown in Table VIII and Table IX. Students seeking a position in a 'community pharmacy' or in the 'industry' sector had distinct characteristics in their career intention and when deciding on their final career. From these results, it can be seen that students seeking a career in a 'community pharmacy' have a clear intention to work as pharmacists, indicating that after a six-year pharmacy program with a focus on pharmacy and clinical practice, they are not influenced by others. Moreover, based on our regular contact with students, we realise that they believe that they can easily find a position in the community pharmacy sector. However, we also realise, through job counselling for students, that students looking for a position in the 'industry' sector tended to have anxious feelings about engaging with an industry. This may be

because the required classes are not pharmaceutically related and industry positions are highly competitive, so it is more difficult to receive a job offer from an industry because of the large number of applicants. Although no specific number of applicants could be obtained for each company because of their confidential information clauses, routine interviews with human resource personnel from more than 20 pharmaceutical companies reveal that competitive rates vary from 20 to 100 times. In this sense, the students deciding on 'industry' positions were more influenced by the elective classes that targeted industry practice and third party factors, such as friends, seniors, and professors.

Satisfaction with the job search process was much higher for females than males (Table X and Table XII), which indicated that the female students had a more serious attitude toward the job search than the males. No differences in satisfaction levels in the final career decisions, however, were found. Overall, irrespective of the work sector, the pharmacy students were generally satisfied with the job search and the results; however, the influence of the intended career on the job search to achieve the final career choice was not clear. Generally, the satisfaction was higher when the career intention matched the final career decision.

Our study indicated that the pharmacy students' attitudes toward their career were strong; however, some factors did influence their final career choices. Outside Japan, many studies have been conducted on pharmacy students' career choices, and this study adds to these with a Japanese sample.

Pharmacy students from just one private pharmacy school were surveyed; therefore, this sample does not represent all Japanese pharmacy students. This study is essentially a pilot study intended to stimulate further research focusing on student career attitudes.

Conclusion

'Opportunity for personal development' is a key word for the pharmacy students considering a career as well as the hospital pharmacists which we reported (Nakagomi *et al.*, 2013). 'Community pharmacy training' and 'hospital pharmacy training' as required classes were found to be very important subjects for pharmacy students in helping them think about their future intended careers, but their 'own interests' was a key factor when making the final career decision after the job search. Female students appeared to have a more serious attitude toward the search for a suitable position and were more satisfied with their job search than males. Students looking for 'industry' positions were affected positively by the elective classes and third party factors when considering their future career. Educators, pharmacists and personnel at the practice sites need to realise that their activities significantly influence the students' future career choices. We hope that the results of this study will assist pharmacy students in making effective career decisions.

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