

**EXPLORATORY STUDY OF ATTITUDES
TOWARD WORK AMONG PHARMACY STUDENTS
AND PHARMACISTS**

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A Dissertation

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Abstract

Recently in Japan, college graduates entering the workplace have experienced high turnover in their new jobs due to disagreements between their work context and their work attitudes; this has become a social issue. Pharmacists are no exception.

To better understand this situation and its causes, the work attitudes of pharmacy students, working pharmacists, and pharmacy faculty need to be investigated. There are many reports from different countries regarding work attitudes; however, there are only a few studies on these areas in Japan. Given this lack of studies, the necessity of exploratory study of this topic in the Japanese context was recognized, and the present research was carried out in order to catch up with the international research.

In this student survey, practical training courses in “hospital pharmacy training” and “community pharmacy training” affected career intentions strongly. Also, a “solicitation effect” of career-related classes on career preference was found. “Opportunity for personal development” is an important keyword for the participating pharmacy students as they consider their future careers—a valued good among Japanese pharmacy students compared to their international counterparts.

The pharmacist survey, similarly to that for pharmacy students, indicated that “personal development” is a key issue for community and hospital pharmacists throughout their careers. Pharmacists were demonstrated to be dedicated to their profession, highly motivated and satisfied with their work, but nevertheless prone to changing jobs. Pharmacy managers and hospital administrators have to recognize the mindset of pharmacists: their concerns, what motivates them, and how best to utilize their professional ability and skills for the benefit of patients and other healthcare professionals. The study also shows that pharmacists’ future work plans may be affected by age, years employed, and job satisfaction—common items influencing both community pharmacists and hospital pharmacists.

According to cluster analysis of pharmacist work attitudes, a cluster for expecting to work in their current job for less than five years corresponded to relatively poor job satisfaction at less than 70 points. It seems that increasing job satisfaction may be more effective than raising salary to maintain a stable pharmacy workforce and prevent workers from quitting.

The latest information this study provides as to Japanese pharmacists' work attitudes could be applied to pharmacy student education. In addition, the results regarding work attitudes could be used by pharmacy managers to improve their employees' practices, satisfaction, and retention. Also, these research results have already been published in English journals for international readers, providing the first cluster-analysis findings on pharmacists' work attitudes in Japan.

Based on the results of this study, the following three proposals are made. First, Japanese pharmacists' work attitudes should be surveyed by third parties regularly. Second, offering a variety of career-related curricula to students may help them make the decision to work in a broader range of pharmaceutical areas. Third, a standardized pharmacy resident program is required, to support professional development among motivated pharmacists.

It is hoped that the results of this study of work attitudes will help pharmacy students make better-informed career decisions, and that this study will stimulate further research regarding work attitudes of pharmacy students and pharmacists.

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1. Introduction

Recently in Japan, college graduates entering the workplace have experienced high turnover in their new jobs due to clashes between their actual work context and their work attitudes; this has become a social issue. According to the national Ministry of Health, Labour and Welfare, approximately 30% of new college graduates have left their permanent work position within three years.¹ Pharmacists are no exception, with overall turnover rates of approximately 30%,² reaching 40% in female³ new pharmacy grads in those major drugstores whose functions include filling prescriptions.

Turnover among young pharmacists who have not yet established themselves in their careers may cause not only knock-on effects on their later professional life but also challenges for workplaces. They may tend to become chronic job-hoppers,⁴ or the workload of their former colleagues may increase or capacity suffer.⁵ Internationally and domestically in Japan, pharmacy managers are quite interested in retaining their workforce. Furthermore, as recruitment expenses increase, so do healthcare costs.⁶

To better understand this situation and its causes, the work attitudes of pharmacy students, actual working pharmacists, and pharmacy faculty need to be investigated, to see if any uncongeniality exists between student's aptitudes and preferences and their occupation or work conditions, and if it stems from conditions at educational institutions or the nature of their education.

There are many reports from different countries regarding work attitudes among these groups—in the United States, the United Kingdom, Southeast Asia, Africa, the Middle East, and perhaps elsewhere. However, there are only a few studies on these areas in Japan,⁷⁻¹⁰ and knowledge of pharmacists' work attitudes is lacking in ways that may impact pharmacy management.

Given this lack of studies, the necessity of exploratory study of this topic in the Japanese context was recognized, and the present research, "Exploratory Study of Attitudes toward Work

among Pharmacy Students and Pharmacists” was carried out in order to catch up with the international research and gain a base of knowledge to address pharmacist work attitudes in Japan.

This study has three objects, as follows. First, it is meant to gather information on pharmacy students’ work attitudes in order to avoid mismatch between their attitudes and their occupation. Second is to grasp students’ and pharmacists’ work attitudes—essential information for educational institutions cultivating students and healthcare organization employing healthcare professionals. Third is to catch up with international studies on work attitudes in the pharmacy profession and develop a body of knowledge on this topic for Japan. Particularly novel elements of the study are the fact that it surveys new 6-year-curriculum pharmacy students (just started) and the fact that it applies cluster analysis to the results of pharmacist work attitudes, the first report in Japan or elsewhere to do so. In this way, this study can serve as an international benchmark. The results, discussion, and proposals presented here are also expected to help pharmacy students make informed career decisions and to help pharmacy academics and professionals comprehend work attitudes among pharmacy students and working pharmacists.

This dissertation consists of two parts, covering attitudes toward work among 1) pharmacy students and 2) community and hospital pharmacists. It includes information from the following articles by the present author, with permission from co-researchers and the academic journals in which the studies were published:

- (1) Nakagomi K, Hayashi Y, Komiyama T. Survey of Attitudes towards Career Choice among Pharmacy Students: A Pilot Study at A Private University in Japan. *Pharm Educ (FIP)*. 2016;16(1):146-157.
(<http://pharmacyeducation.fip.org /pharmacyeducation/article/view/394/401>)

- (2) Nakagomi K, Kameya T, Fukai K, Yamada N, Kanno N. Survey of Attitudes toward Work among Pharmacists Working in Large Chain Community Pharmacies in Japan. *Jpn J Pharm Health Care Sci.* 2011;37(2):87-103.
- (3) Nakagomi K, Takahashi S, Hayashi Y. Survey of Attitudes toward Work among Pharmacists Working in Large Group Hospitals. *Gen Med.* 2013;14(1):23-31. (DOI: 10.14442/general.14.23; <http://onlinelibrary.wiley.com/doi/10.14442/general.14.23/epdf>)
- (4) Nakagomi K, Hayashi Y, Komiyama T. Cluster Analysis of Pharmacists' Work Attitudes. *J Gen Fam Med.* 2017;18(6):341-353. (DOI: 10.1002/jgf2.87; <http://onlinelibrary.wiley.com/doi/10.1002/jgf2.87/epdf>)

Regarding ethics clearance, the Institutional Ethical Committee of Research Center for Liberal Education, Musashino University, approved all above studies. Studies (2) and (3) are not relevant to the “Ethical Guidelines for Medical and Health Research Involving Human Subjects”¹¹ because the studies were not medical or health research involving human subjects.

Selected findings were presented at the 129th (Kyoto, 2009), 131st (Shizuoka, 2011), and 133rd (Yokohama, 2013) Annual Meeting of the Pharmaceutical Society of Japan and the 19th (Nagasaki, 2009), and the 20th (Chiba, 2009) Annual Meeting of the Japanese Society of Pharmaceutical Health Care and Science.

There was no funding or conflict of interest for any of the above studies.

2. Study I: Pilot survey of attitudes towards career choice among pharmacy students

2.1. Introduction

The 6-year pharmacy program in Japan, focusing on practical pharmaceutical care, includes practical training onsite (a new element of pharmacy training in Japan since 2006), and was started in 2006, replacing a traditional 4-year program. According to the Council on Pharmaceutical Education in Japan, of the first three cohorts who completed the 6-year program (students who graduated in March 2012–2014), 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 public service or other areas of interest.^{12,13,14}

All over the world, pharmacy students are deciding their future professional careers influenced by local socioeconomic and healthcare systems.¹⁵ There have been several previous attitude surveys conducted with pharmacy students in various countries.¹⁶⁻²⁴ These studies also examined career preferences on graduation and the factors that influenced these final career choices. However, there have been no studies that have examined the future career aspirations of the 6-year pharmacy students in Japan—partly because this program structure is a relatively new development, since 2006, as noted. This new program has focused more on pharmacy work and clinical practice as the primary pharmacist activities than previously. However, some of these new pharmacy graduates have still chosen various other occupations in the pharmaceutical industry.^{12,13}

This study aimed to explore final-year private pharmacy school student attitudes toward their future careers, including their degree of satisfaction with their job search and its outcome. The hope is that the results can inform students attempting to make a rational occupational choice and faculty advising their students on their future careers.

2.2. Method

The questionnaire focused on the attitudes of pharmacy students regarding their search for a

position and the final outcomes of the search, as noted. The questionnaire was prepared based on consideration of work attitudes observed in community and hospital pharmacists during my study and experience managing pharmacies; furthermore, some factors related to the daily life of students that might affect their job search and decision were also added (Figure 1). This cross-sectional, self-administered survey was designed to be easy to answer and was based on predetermined, categorized answers. It covered nine major elements: (1) gender; (2) intended career (before job search) (21 categories); (3) final career decision (after the job search) (21 categories); (4) reason for unmet intentions (if any) 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 choice of career before the job search (particular required or elective classes, career support, influence of third parties) (21 categories; six-point Likert-type scale ranging from 0: useless to 5: very useful); (8) factors that affected the final career decision after the job search (8 categories; again, a six-point Likert-type scale); and (9) degree of satisfaction with the final outcome (out of 100 points). The 21 career intention/final career decision categories were integrated into five groups: community pharmacy, hospital pharmacy, industry position (pharmaceutical industry, research organization, cosmetic industry, and others), public service position (national/local government officer), and graduate school. The survey was approved by the Career Committee in the Faculty of Pharmacy, Musashino University.

There were 405 pharmacy students enrolled in their final year (year 6) at Musashino University in 2011–13. The survey was conducted each December from 2011 to 2013, after the students had completed their job search. Students were advised that participation in the survey was voluntary and anonymous and that the 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 correspondence between input data and original data was

2.3. Results

Fixed data

Fixed data covered gender, career intention, and final career decision on graduation. The number of respondents was 295, or 72.8% of the 405-enrolled final-year students, 2011–2013 (male 30.2% and female 69.8%). The number of usable responses for each question varied; missing or uncertain responses were excluded.

Career intention and final career choice

The career students had desired before their job search was defined as their “career intention,” “intended career,” or “intention career,” and the career they decided on after job-hunting, as the “final career choice,” “final career decision,” or “final decision career.” The career intentions and final career decisions of the respondents are shown in Table 1. 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.

The final career decision after 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 the 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, while the percentage of respondents who finally decided to work in a “hospital pharmacy,” in “industry,” or in “public service” was lower than shown in the career intentions.

Table 1. Career intention and final career decision

Career sector	Career intention before job search						Final career decision on completing job					
	Total		Male		Female		Total		Male		Female	
	N=295		N=89		N=206		N=295		N=89		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 originally 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 2). Two major reasons for these changes (examined only in 2013) were “results of self-searching or self-analysis” (42.1%) and “impact of practical training in community and hospital pharmacies” (21.1%) (Table 3).

Table 2. Intended career changed or unchanged

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

Table 3. Reason for changed intended career toward final career decision

Items/categories	Total		Gender			
	N=38		Male N=10		Female N=28	
	n	%	n	%	n	%
Changed intention career because of						
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

Rate of achievement of intended career

All the “graduate school” expectants achieved their goal by the end of the job search, as did 92.2% of respondents who indicated an intention to work in a “community pharmacy.” However, for other professions, the achievement rates were 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, and 30.0% of “public service” expectants (Table 4).

Rate of students whose intended career did not change

The percentage of students seeking the same career sector in their final career decision as in their initial intention was 90.6% for “industry,” 77.6% for “hospital pharmacy,” 63.1% for “community pharmacy,” and 60.0% for “public service” and “graduate school” each. The rate for those who had intended to go to a “community pharmacy” was 44.7% for males and 69.4% for females, lower than that for any other occupation (Table 5).

Table 4. Rate of achievement of intended career

Intention career (I)	Total	Gender		Final career decision (F)	Total	Gender				
		Male	Female			Male	Female	F/I	F/I (%)	F/I (%)
	n	n	n		n	n	n	n	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	15	73.3

Table 5. Rate of students whose intended career did not change

Final career decision (F)	Total	Gender		Intention career (I)	Total	Gender				
		Male	Female			Male	Female	I/F (%)	I/F (%)	I/F (%)
	n	n	n		n	n	n	n	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

Most important consideration for career choice

Table 6 shows the most important consideration for career choice by gender and final career decision. The five major considerations are as follows: “opportunity for personal development” was chosen by 29.6% of respondents (males: 37.1%, females: 26.3%; industry position: 50.8%, graduate school: 40.0%, hospital pharmacy: 38.8%, public service: 20.0%, community pharmacy: 16.8%); “practical utilization of pharmacist license” by 13.3% (males: 12.4%, females: 13.7%; community pharmacy: 17.4%, hospital pharmacy: 16.4%, public service: 10.0%, industry position: 1.6%, graduate school: 0.0%); “desire to work in the healthcare field” by 11.9% (males: 6.7%, females: 14.1%; hospital pharmacy: 25.4%, graduate school: 20.0%, community pharmacy: 8.1%, industry

position: 7.9%, public service: 0.0%); “employment terms and conditions” by 10.9% (males: 9.0%, females: 11.7%; public service: 30.0%, community pharmacy: 16.8%, hospital pharmacy: 4.5%, industry position: 1.6%, graduate school: 0.0%); and “policy and mission of employer” by 9.2% (males: 5.6%, females: 10.7%; community pharmacy: 14.8%, industry position: 4.8%, hospital pharmacy: 3.0%, public service and graduate school: 0.0%).

Regardless of gender, many students made much of the “opportunity for personal development,” although they also demonstrated various other considerations depending on the occupation they chose.

Table 6. 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

Impression of practical training

Practical training in community and hospital pharmacies is a mandatory subject in the 6-year pharmacy program, conducted for 11 weeks at community or hospital pharmacies in the fifth year. After the practical training, the top five impressions of the training program (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 healthcare” (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 relationships in the workplace” (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%) (see Table 7).

Table 7. Impression of practical training (multiple-choice 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	

Factors influencing intended and final career decision

Factors influencing intended and final career decision by gender

To determine what factors influenced 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 8) and by final career decision (Table 9).

The mean weighted score (mws) was calculated on a six-point Likert-type scale ranging from 0: useless to 5: very useful.

For the intended occupation, the rating for all influence factors was over the median of 2.5, except for the "cosmetic industry" under elective class for males and "in-house career advisers" under third-party influences for both males and females (Table 8). As a whole, for the top five training types or job events, the mean weighted score (mws) of influence for the career intention was 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 6-month courses in the 6-year pharmacy program, and "clinical research development" ($p=0.014$) in the elective class were found to significantly affect the career intention of females but not of males. There were no differences between males and females regarding the other factors affecting career intention.

The ratings for factors influencing final career choice after completing the job search were found to be primarily third parties 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 8). Following one's "own interests" had the highest mws at 4.61 for both genders, 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.

Table 8. Factors influencing intended and final career decision by gender

Influencing factors	Total			Gender						
	N	mws	SD	n	mws	SD	n	mws	SD	M vs F p value
Influences on 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										
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

mws: mean weighted score (score 0-5 median=2.5)

p value: Wilcoxon rank sum test

SD: standard deviation

: p < 0.05

Table 9. Factors influencing intended and final career decision in relation to 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	mws	SD	n	mws	SD	n	mws	SD	n	mws	SD	n	mws	SD											
Influences on 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	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	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 (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	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	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	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	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	<0.001	1.000	1.000	0.075	1.000	1.000	0.188	1.000	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	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	<0.001	1.000	1.000	0.120	1.000	1.000	0.054	1.000	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	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	<0.001	0.001	1.000	0.004	1.000	1.000	0.074	1.000	0.107	0.380	1.000
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	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	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	1.000
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	1.000
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	1.000
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	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	1.000
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	<0.001	0.046	1.000	0.001	1.000	0.378	0.010	1.000	0.011	0.040	1.000
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	1.000

mws: mean weighted score (score 0-5 median=2.5)

SD: standard deviation

p value: Wilcoxon rank sum test with Bonferroni correction

: p < 0.05

Factors influencing intended and final career decision in relation to final career decision

Differences between the influencing factors in each career sector are shown in Table 9. “Community pharmacy training” was found to have a significantly greater influence on the students who chose “community pharmacy” as their final career sector (mws: 4.46) than on those who chose “industry” (mws: 3.91) ($p=0.011$). “Hospital pharmacy training” similarly significantly affected respondents who chose “hospital pharmacy” as their final career sector (mws: 4.69) rather than “industry” (mws: 4.14) ($p=0.009$). Differences between influences on “community pharmacy” and “industry” were found in some elective classes that had focused on occupations in “industry,” such as “internships (industry)” (mws: 3.53, 4.75, respectively) ($p=0.001$), “career design 2 (study pharmaceutical company)” (mws: 3.37, 4.09, respectively) ($p=0.006$), “clinical research development” (mws: 2.67, 4.08, respectively) ($p=0.020$), and “pharmaceutical industry (overview)” (mws: 2.64, 4.00, respectively) ($p=0.003$).

For the influence of third parties before the job search, a distinction was also found between “community pharmacy” and “industry” for “friends” (mws: 3.65, 4.23) ($p<0.001$), “media” (mws: 3.10, 3.79) ($p=0.002$), “seniors” (mws: 2.93, 4.05) ($p<0.001$), and “professors or instructors” (mws: 2.77, 3.56) ($p<0.001$). “Professors or instructors” had less impact on “community pharmacy” (mws: 2.77) than on “hospital pharmacy” (mws: 3.69) ($p<0.001$), “industry” (mws: 3.56) ($p=0.001$), or “graduate school” (mws: 5.00) ($p<0.004$).

When the students made their final career decision after the completion of their job search, there were several factors that distinguished them depending on the chosen occupation. “Community pharmacy” was significantly less affected by “friends” (mws: 2.83) ($p=0.044$), “seniors” (mws: 2.29) ($p=0.039$), or “professors or instructors” (mws: 1.91) ($p=0.046$) compared with “industry” (mws: 3.40, 2.97, 2.61). “Hospital pharmacy” was influenced more by “professors or instructors” (mws: 2.94) ($p<0.001$) and “parents” (mws: 3.18) ($p=0.016$) than by “community pharmacy” (mws: 1.91, 2.46,

respectively). “Professors or instructors” influenced “graduate school” (mws: 5.00) more than any other final career decision: “community pharmacy” (mws: 1.91) ($p=0.001$), “hospital pharmacy” (mws: 2.94) ($p=0.010$), “industry” (mws: 2.61) ($p=0.011$), and “public service” (mws: 2.00) ($p=0.040$). As a whole, the respondents “own interests” were found to exert the highest influence, which was significant for “hospital pharmacy” (mws: 4.43) and “industry” (mws: 4.83) ($p=0.004$).

Students seeking a job in a community pharmacy awarded significantly higher scores to community pharmacy training, and students seeking a job in a hospital pharmacy to hospital pharmacy training, than students seeking job in industry, who for their part showed significantly higher score in elective pharmaceutical-related classes than the students seeking jobs in community pharmacy. A “solicitation effect” of career-related classes on career preference was thus found.

Satisfaction scores for 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” (see Table 10); however, there were no significant differences among the occupations (see Table 11). 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 males ($p=0.024$). 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 between gender in satisfaction score by final career decision for “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) ($p=0.011$).

Table 10. Satisfaction scores for final outcomes of job search

Total				Final career decision																				
Gender	n	mean score	SD	p	Community pharmacy				Hospital pharmacy				Industry				Public service				Graduate school			
					n	mean score	SD	p	n	mean score	SD	p	n	mean score	SD	p	n	mean score	S	p	n	mean score	SD	p
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	

p value: Wilcoxon rank sum test : p < 0.05

SD: standard deviation

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Table 11. Satisfaction differences among final career decisions

Comparison between final career decision	Difference for 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 with Bonferroni correction

Satisfaction scores for final outcomes from intended career to final decision

Satisfaction scores for final outcomes from intended career to final decision are shown in Table 12. The combined satisfaction score comparisons from career intention before the job search to final career decision are as follows: 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); thus, all of them were lower than the average of 78.2 points for males. Other findings on this shift 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), lower than the average 86.1 points for females.

Gender differences between satisfaction scores for 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 all questionnaire items was analyzed using Spearman’s rank correlation coefficient; however, specific items were not recognized as satisfaction factors ($\rho =0.153$).

Table12. Satisfaction scores for final outcomes from intended career to final career decision

Intention career	n	Final career decision	n	Total		Gender					M vs F p value	
				Mean	SD	Male		Female				
						n	Mean	SD	n	Mean	SD	
*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

** : Others were extracted from students who changed intended career. *

p value: Wilcoxon rank sum test : p < 0.05

SD: standard deviation

2.4. Discussion

The ratio of male to female respondents in this study was 30% to 70%; this proportion of female students is higher than among recent pharmacy graduates in Japan in general (40% to 60%).¹² The most popular occupation sectors were “community pharmacy” (50.5%), “hospital pharmacy” (22.7%), and “industry” (21.7%) (Table 1). Recently, graduates of private pharmacy schools in Japan have found jobs mainly in “community pharmacy” (45.7%), “hospital pharmacy” (28.8%) and “industry (10.7%)”; and public university graduates, in “hospital pharmacy” (39.4%) followed by “community pharmacy” (25.2%) and “industry (20.4%).^{12,13} The top final career decision in private pharmacy schools was “community pharmacy”; in public universities, it was “hospital pharmacy.” Further, data were gathered on several elective classes focused on different career-related aspects of the pharmaceutical industry, such as “pharmaceutical industry (review),” “pharmaceutical manufacturing,” “clinical research development,” “internship (industry),” and “career design 2 (focus pharmaceutical company).” It appears that these circumstances affected a lower proportion of respondents who chose “hospital pharmacy” and a higher proportion of those who chose “industry.”

There are also some studies from outside Japan on preferable career of pharmacy graduates. Community pharmacies (chains and independent) (45.5%) and hospital pharmacies (27.6%) were found to be the most preferred working sectors in a US study,¹⁶ while an Australian study indicated that the highest career intention was for community pharmacies, followed by hospital pharmacies.¹⁷ These results are thus similar to the present Japanese data.

More than 50% of pharmacy students in a South African study indicated that they would prefer to work in a hospital.¹⁸ A Nigerian study found that the most preferred

occupations on graduation were in hospital practice (28.9%) and community pharmacy practice (26.9%).¹⁹ Student career choices on graduation in the US were mainly focused on the retail chain sector, but were shifting toward more clinical settings.²⁰ In contrast, pharmacy students in the United Kingdom tended to prefer a career with patient contact above all (which includes both community and hospital practice).²¹ Overall, depending on healthcare system or infrastructure, students tended to choose “community pharmacy” or “hospital pharmacy” for their jobs. In contrast, clinical pharmacies were found to be the preferred sector for a future career in Pakistani,²² Sudanese,²³ and Saudi Arabian²⁴ studies; however, it was not clear whether clinical pharmacy practices had been established in those countries.

This chapter has described the different career preferences between public and private pharmacy schools in Japan; very similarly, a Malaysian report stated that final-year students at public universities tended to select hospital pharmacy practice for their first job after graduation, while private university students chose community pharmacies.²⁵

However, the career aspirations of students in other countries also differed by gender.^{15,26} Female students were found to choose a career in a hospital pharmacy more often than males in a New Zealand study.¹⁵ The present 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 work conditions in a “community pharmacy” more familiar and preferable—its being “in the field” close to healthcare work, having flexible working conditions, work–life balance, or adjustment in one’s way of living. In contrast, “industry” is an attractive field for males owing to the

good pay obtained there and the variety of job opportunities available, while “hospital pharmacy” is also considered an attractive job site in which they can work with many medical professionals in Japan.

Although not top ranked, interest in industry positions after graduation ranked fairly high in some cases elsewhere also: 34% in South Africa¹⁸ and second rank in Pakistan²² and in one Malaysian private university.²⁵ Similarly, in a Syrian study, community pharmacies and the pharmaceutical industry were the most preferable future careers for pharmacy students.²⁶ 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 the need was recognized for inclusion of industry-oriented curriculum to highlight the benefits for students in these careers.^{21,24} More broadly, in the present study as in the reports from U.K. and Saudi Arabia, the necessity of pharmaceutical-related classes that reflected students’ different career preferences was recognized. In this study, the ratios of respondents who indicated “community pharmacy,” “hospital pharmacy,” or “industry” was their intended career were 34.5%, 26.1%, and 31.5%, respectively, which was fairly well balanced given that the author’s school offers elective classes related to the healthcare industry. Furthermore, the author’s students seem to recognize that pharmacists work in various fields in Japan, a recognition that may also affect their intended career. However, the ratio of respondents between intended career and the final career decision was somewhat different (Table 1).

In this study, “opportunity for personal development” was the top-ranking consideration for career choice, showing positive work attitudes in Japanese pharmacy students. The most important consideration for career choice, as noted, was the “opportunity for personal development” (29.6%), while “salary” (5.4%) was the lowest

overall, with more male than female students indicating its importance (10.1%), as indicated in Table 6. “Opportunity for personal development” allows one to become a mature and well-socialized human while increasing one's abilities, skills, or knowledge through dedication to one’s occupation and interaction with colleagues in the workplace.

Several international studies have examined important career consideration factors. Some have found that intrinsic factors were more highly ranked than extrinsic ones; examples include “caring for/helping people,”¹⁵ “service to the community” (56% in government hospital and 50% in retail pharmacy),¹⁸ “personal interest,”²² “personal fulfillment,”²⁶ and “job satisfaction.”¹⁶ Also highlighted as important job concerns were extrinsic factors such as “work environment,”²⁰ “salary,”^{25,27} “salary and work environment,”²⁴ and “advanced opportunities.”¹⁹ Interestingly, most previous studies, unlike this study, have reported that “salary” was the highest-ranking consideration for career choice. The students in this study recognized that the starting wage in the community pharmacy sector was high; however, life-time earnings were not much higher compared with those in industry, which are also competitive internationally, for instance almost the same as those in the UK.²⁸ In contrast, in the US the mean annual salary of pharmaceutical industry personnel is considerably less than that of pharmacists.²⁹

The required classes, “hospital pharmacy training” and “community pharmacy training,” were highly rated career choice factors (Table 8), and it was recognized that both these practical training courses affected career intentions strongly. Pharmacists at these practice sites should realize how much they can influence their students’ future. Female students were found to be more strongly affected in this regard than the males, demonstrating that females were possibly more eager to take this kind of pharmacy training seriously. A positive experience with practice sites was also found to be the top

factor for students in a US study.²⁷ The importance of practical training was recognized in both Japan and the United States; however, “own interests,” similar to “personal interest,” was the top-ranking factor in both countries when deciding on a final career after the job search,²² while “parents” and “recruiters” were found to be the key influences for females, possibly revealing their more positive listening disposition.

The factors influencing final career choice are shown in Table 8 and Table 9. 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 6-year pharmacy program with a focus on pharmacy and clinical practice, they are not influenced by other persons. Moreover, based on the author’s regular contact with students, it is apparent that they generally believe that they can easily find a position in the community pharmacy sector, while in contrast it is also clear based on job counseling conducted with students that students looking for a position in the “industry” sector tend to have anxious feelings about engaging with industry. This may be in part because the required classes are not pharmaceutically related and industry positions are highly competitive, so it is more difficult to receive a job offer in industry because of the considerable number of applicants. Although no specific number of applicants could be obtained for particular companies because of their confidential information clauses, routine interviews with human resource personnel from more than 20 pharmaceutical companies reveal that receiving 20 to 100 applications for a single position is common. In this sense, the students deciding on “industry” positions were more influenced by the elective classes that targeted industry practice and by third-party factors, such as friends, senior students,

and professors.

Satisfaction with the job search process was much higher among females than males (Table 10 and Table 12), which indicated that the female students had a more serious attitude toward the job search than the males. In contrast, no differences in satisfaction levels in final career decisions were found. Overall, irrespective of work sector, the respondents were generally satisfied with the job search and the results; however, the influence of the intended career on the job search (leading to the final career choice) was not clear. Generally, satisfaction was higher when the career intention matched the final career decision.

This study indicated that the pharmacy students' attitudes toward their career were largely established; 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. This pilot study may stimulate further research focusing on student career attitudes.

2.5. Conclusion

“Opportunity for personal development” is an important keyword for the participating pharmacy students considering a career—that is, which is the important matter they make much of. As compared with international reports that pharmacists enter the profession mainly for the high salary, “opportunity for personal development” is considered an important positive element by these Japanese pharmacy students and is a central part of their perspective as budding professionals. To address their expectations in this regard, the importance of continuation education and training that focus on career-building, regardless of their ultimate occupations, is clear.

“Community pharmacy training” and “hospital pharmacy training,” required

classes, were found to be very important subjects for helping pharmacy students think about their intended careers, but their “own interests” was the 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 to be more satisfied with their job search than males. Students looking for “industry” positions were influenced positively by their elective classes and third-party factors when considering their future career. Various career-related curricula can be usefully developed that exploit the influence and address the avenues opened up by these classes for students’ individual career decisions.

Limitations

Pharmacy students from just one private pharmacy school were surveyed; therefore, this sample does not represent all Japanese pharmacy students.

3. Study II: Survey of working pharmacists' attitudes towards work

3.1. Introduction

In general, as employee job satisfaction increases, customer or patient satisfaction also rises.^{7,30} Community pharmacists in Japan have been found to be less satisfied with their situation, and their job satisfaction was also found to vary significantly depending on gender and years of experience.⁸ Factors identified as impacting job satisfaction of community pharmacists include “management policy,” “work environment,” and “organizational administration,” but not “individual motivation.”⁹ Most hospital pharmacists regarded their profession as rewarding, but were less satisfied with their position as compared with other healthcare professionals.¹⁰ For pharmacists working as hospital professionals, the main factors influencing job satisfaction have been found to be “performance evaluation with career development” and “the upbeat atmosphere.”⁷ One gap in the above studies is that they do not compare work attitudes between pharmacists and ordinary workers.

Many studies on pharmacists' work attitudes have been conducted outside Japan.³¹⁻³⁴ In those studies, it was found that pharmacists were largely satisfied with their job,³¹ although job/career satisfaction and turnover intention posed important quality-of-worklife issues from the pharmacists' perspective.³⁵ The average annual turnover rate and the average term employment were discussed.³² Future work plans were found to be influenced by a variety of individual, organizational, and cultural/climatic factors.³³ However, there are not many discussions of job satisfaction, turnover, and future work plans of community pharmacists or hospital pharmacists in Japan.⁷⁻¹⁰

Today in Japan, many new pharmacy graduates seek work in chain community pharmacies, which hardly existed in the country as recently as the early 1990s. Also, new

pharmacy graduates are looking for work as hospital pharmacists; however, new openings are scarce. Hospitals consistently recruit a limited number of new pharmacists each year, but work attitudes among these pharmacists have been little examined until this study.

The object of this study is to explore work attitudes, especially job satisfaction and future work plans, of community pharmacists and hospital pharmacists, which could help students make career choices.

3.2. Methods

Objective of surveyed samples

The survey of community pharmacists subjected to analysis here was conducted from December 2007 to January 2008, at Kraft, Medical Pharmacy, Nihon Chozai, and Pfercos pharmacies. The survey of hospital pharmacists was conducted from January 2010 to March 2010, at Tokushukai Hospital Group hospitals. These community and hospital pharmacies were chosen due to the possible variety of pharmacists employed, annual hiring of many new pharmacy graduates, and dynamic workplace environments. That is, chain pharmacies feature sophisticated operations and good employment education in locations nationwide, while group hospitals feature a variety of operation styles, sizes (higher or lower numbers of beds), and locations. Even though chain pharmacies and group hospitals are ostensibly managed by their head offices or headquarters, each is actually operated by a supervising pharmacist, director of pharmacy, or hospital president. Although the data collected do not of course completely represent all Japanese pharmacists, they should be broadly representative of community and hospital pharmacists at least.

Survey questionnaire

The questionnaires for this cross-sectional self-administered survey were

designed with reference to previous Japanese studies,⁸ international studies,³¹ and also some ideas provided by several pharmacy managers. They were designed so that respondents could complete them in as short a time as possible (Figure 2).

The demographic characteristics covered eight items, which included covered employment status (“regular,” or directly employed as a full-time pharmacist/“non-regular,” for any other employment arrangement), gender, marital status, age (5 categories), and years employed in the current workplace (5 categories) for five items. Three other questions were also asked: the number of pharmacists in the current workplace, the number of workplaces changed in the pharmacist’s career, and the number of pharmacies served since graduation. On work attitude, seven questions were asked: the respondent’s main reason for being a community pharmacist/hospital pharmacist, reasons for choosing the current workplace (ranked as top three), the most important work-related concerns, job satisfaction, reasons for any dissatisfaction with the current workplace, future work plans and, reasons for leaving the previous workplace for those who had changed to the current workplace (ranked as top three).

Questionnaire for community/hospital pharmacists survey

1) Employment Status 1. Regular 2. Non-regular

2) Gender 1. Male 2. Female

3) Marital status 1. Single 2. Marriage

4) Age 1. 22-25 2. 26-29 3. 30-34 4. 35-39 5. 40-

5) Number of pharmacists at current workplace
 1. -4 2. 5-9 3. 10-14 4. 15-

6) Number of companies at current workplace after starting your career
 1. 1 2. 2 3. 3 4. 4 5. 5-

7) Number of community/hospital pharmacies at current workplace after starting your career
 1. 1 2. 2 3. 3 4. 4 5. 5-

8) How long have you been working for current employer? (years employed)
 1. -1 year 2. 2-3 years 3. 4-5 years 4. 6-9 years 5. 10 years-

9) Reasons for being a community/hospital pharmacist (rank first)
 1. Practical utilization of pharmacist license 2. Salary
 3. Opportunity for personal development 4. Desire to work in health care field
 5. Continuous learning 6. Easy work 7. Others

10) Reasons for choosing current workplace (rank top three reasons if any)
 1. Well-known large company 2. Policy and mission 3. Listed company 4. Salary
 5. Employment terms and conditions 6. Opportunity for personal development
 7. Employees training system 8. Convenient commute
 9. Recommendation from senior or friend 10. Others

11) Rate of job satisfaction at current workplace (over 100 points)
 1. 80-100 points 2. 70-79 points 3. 60-69 points 4. 50-59 points 5. <50 points

12) Reasons for dissatisfaction with current workplace (rank first)
 1. Salary 2. Employment terms and conditions 3. Lack of personal development
 4. Evaluation toward myself 5. Employees training system
 6. Interpersonal relationship 7. Workplace circumstances 8. Hard work
 9. Work content issues 10. Others

13) Most important work-related concerns (rank first)
 1. Salary 2. Work content 3. Employment stability 4. Work schedule
 5. Work and family life balance 6. Workplace circumstances
 7. Interpersonal relationship 8. Others

14) Future work plans
 1. Stay until retirement 2. Stay for long term (more than 5 years)
 3. Stay for less than 5 years 4. Undecided

15) Reasons for turnover (rank top three reasons if any)
 1. Salary 2. Employment terms and conditions 3. Lack of personal development
 4. Evaluation toward myself 5. Employees training system
 6. Interpersonal relationship 7. Workplace circumstances 8. Work content issues
 9. Family issues 10. Others

Figure 2. Survey questionnaire of work attitudes among community/hospital pharmacists

Procedure of surveys

A review of the questionnaire and implementation method was discussed and approved by the headquarters of four large chain pharmacies—Kraft, Medical Pharmacy, Nihon Chozai, and Pfercos—with approximately 600 widely dispersed outlets of diverse sizes. (A more accurate number could not be identified because several outlets opened or closed during the survey period). The questionnaire and implementation process were also discussed and approved at a pharmacy directors meeting of all Tokushukai Hospital Group with 66 independently operated hospitals of various sizes, from 30 to 600 beds.

Approval to conduct the study was secured by the pharmacies and hospitals, as noted above, and local managers explained to participants that the study was anonymous and voluntary, and that the data would only be used for research purposes. Completed sealed answer sheets from each institution were sent to the investigator directly. Data for community pharmacists were input for processing by Intage, Inc. (Tokyo), and data for hospital pharmacists by Esumi Co., Ltd. (Tokyo). The input data were confirmed against original data using a double-check system by each organization.

Analytical method

The surveyed data were tested with Chi-squared tests, Wilcoxon rank-sum test, and Kruskal–Wallis test, depending on the nature of the data, using SPSS 16.0J for Windows. “Quantification Theory 1” and “Quantification Theory 2” (Esumi Co., Ltd.) were used for job satisfaction and future work plans, respectively. Missing or unclear responses were excluded, and so the amount of data varied from question to question. A p-value less than 0.05 was defined as statistically significant *a priori*.

3.3. Results

Demographic characteristics and summary of work attitudes among surveyed

community pharmacists and hospital pharmacists are given in Table 13 and Table 14, respectively.

Table 13. Demographic characteristics of respondents (all employment categories)

Demographic characteristics item	Category	Community pharmacist (%)	Hospital pharmacist (%)
Employment status	Regular	1,270 (80.1)	429 (97.5)
	Non-regular	315 (19.9)	11 (2.5)
Gender	Male	499 (31.5)	177 (40.2)
	Female	1,086 (68.5)	263 (59.8)
Marital status	Single	955 (60.3)	308 (70.0)
	Married	630 (39.7)	132 (30.0)
Age	22-25	376 (23.7)	137 (31.1)
	26-29	446 (28.2)	130 (29.5)
	30-34	328 (20.7)	72 (16.4)
	35-39	162 (10.2)	47 (10.7)
	40-	273 (17.2)	54 (12.3)
Years employed in the current workplace	-1	364 (23.0)	45 (10.2)
	2-3	460 (29.0)	145 (33.0)
	4-5	264 (16.7)	85 (19.3)
	6-9	354 (22.3)	75 (17.0)
	10-	143 (9.0)	90 (20.5)
Number of pharmacists in the current workplace	-4	735 (46.4)	76 (17.3)
	5-9	603 (38.0)	84 (19.1)
	10-14	202 (12.7)	65 (14.8)
	15-	45 (2.8)	215 (48.9)
Number of workplaces changed since graduation	1	808 (51.0)	321 (73.0)
	2	309 (19.5)	66 (15.0)
	3	225 (14.2)	23 (5.2)
	4	129 (8.1)	17 (3.9)
	5-	114 (7.2)	13 (3.0)
Number of pharmacies worked since graduation	1	1,103 (69.6)	359 (81.8)
	2	275 (17.4)	51 (11.6)
	3	136 (8.6)	18 (4.1)
	4	41 (2.6)	9 (2.1)
	5-	30 (1.9)	2 (0.5)

Table 14. Summary of work attitude (all employment categories)

Item/category	C (%)	H (%)	Item/category	C (%)	H (%)
Main reason for being a C/H	n=1,579	n=435	Reasons for dissatisfaction	n=1,529	n=430
1. Practical utilization of pharmacist	42.8	9.0	1. Salary	27.5	23.0
2. Salary	3.3	0.2	2. Employment terms and conditions	29.0	22.1
3. Opportunity for personal development	15.1	32.4	3. Lack of personal development	2.7	2.8
4. Desire to work in health care field	21.7	46.9	4. Evaluation by supervisor	1.4	1.6
5. Continuous learning	8.7	8.0	5. Employee training system	1.6	7.2
6. Easy work	0.9	0.0	6. Interpersonal relationships	3.6	5.3
7. Others	7.6	3.4	7. Workplace circumstances	6.2	7.2
			8. Hard work	13.4	17.2
Reasons for choosing current workplace*	n=1,580	n=440	9. Work content issues	6.3	5.8
1. Well-known large group	36.5	19.8	10. Others	8.3	7.7
2. Policy and mission	7.8	15.5			
3. Listed organization	1.6	0.0	Future work plans	n=1,568	n=437
4. Salary	2.0	1.1	1. Stay until retirement	7.6	5.5
5. Employment terms and conditions	15.3	5.0	2. Stay for long term (more than 5 years)	30.1	26.3
6. Opportunity for personal development	7.0	20.7	3. Stay for less than 5 years	26.0	35.5
7. Employee training system	11.5	1.1	4. Undecided	36.3	32.7
8. Convenient commute	10.0	17.7			
9. Recommendation from senior or friend	4.2	9.5	Reasons for turnover *	n=711	n=106
10. Others	4.1	9.5	1. Salary	6.9	5.7
* Listed reasons ranked first from top three			2. Employment terms and conditions	20.3	11.3
			3. Lack of personal development	14.5	32.1
Most important work-related concerns	n=1,578	n=439	4. Evaluation by supervisor	0.7	0.0
1. Salary	5.8	3.4	5. Employee training system	1.7	0.9
2. Work content	33.2	42.1	6. Interpersonal relationships	7.2	8.5
3. Employment stability	6.5	5.2	7. Workplace circumstances	0.8	0.9
4. Work schedule	6.0	3.6	8. Work content issues	7.5	4.7
5. Work and family life balance	20.3	17.3	9. Family issues	27.4	17.9
6. Workplace circumstances	1.6	1.6	10. Others	13.0	17.9
7. Interpersonal relationships	25.6	24.8	* Listed reasons ranked first		
8. Others	1.0	1.8	from top three		
Job satisfaction	n=1,581	n=440			
1. 80-100 points	17.8	15.2			
2. 70-79 points	42.8	36.1			
3. 60-69 points	27.3	30.2			
4. 50-59 points	8.6	12.5			
5. <50 points	3.5	5.9			

C: community pharmacist

H: hospital pharmacist

3.3.1. Survey of community pharmacists

Demographic data

The rate of usable data was 76.5%; that is, usable data were gathered from 1,585 of a total of 2,071 pharmacists who completed the basic demographic data.

Here are the characteristics of the respondents (Table 13): 68.5% female, 60.3% single, 80.1% in regular employment, 51.9% aged 22–29 years, and 52.0% employed less than 3 years. Comprehensive results are shown in Table 14.

Reason for being a community pharmacist and choosing the current workplace

The main reason for being a community pharmacist for more than 60% was an interest in putting their license into practice, categorized broken down into “practical utilization of pharmacist license” (42.8%) and “desire to work in healthcare field” (21.7%). The highest-ranked reason for choosing the current workplace was that it was a “well-known large company” (36.5%), followed by good “employment terms and conditions” (15.3%).

Most important work-related concerns

The respondents’ most important concerns regarding their work were as follows: “work content” (33.2%), “interpersonal relationships” (25.6%), and “work and family life balance” (20.3%).

Job satisfaction and dissatisfaction

Respondents were asked to place their personal level of job satisfaction within the following parameters (out of 100 points): 80–100, 70–79, 60–69, 50–59, or <50 points; approximately 95% of the respondents reported a rate of satisfaction above 50 points. “Employment terms and conditions” (29.0%) was ranked as the largest area of dissatisfaction, followed by “salary” (27.4%).

Future work plans and reason for turnover

Regarding future work plans, only 7.6% of respondents chose “stay until retirement.” Approximately half of the respondents had changed jobs in their careers; the two main reasons for leaving their previous work place were “family matters” (27.5%), and “employment terms and conditions” (20.3%).

Differences of work attitude among demographic

As seen in Table 15, there were significant differences in responses by demographic factors, notably including differences between single and married on all questionnaire items. Job satisfaction showed significant differences by employment status, marital status, years employed, and number of pharmacies joined after graduation. For job satisfaction with regular employment, significant differences were exhibited between males and females, single males and females, and married males and females. Future work plan data showed significant differences in all basic demographic characteristics: employment status, gender, marital status, age, and years employed; and also among all groups of regular employment.

Table 15. Differences of work attitudes among demographic of community pharmacists (all employment categories)

Category (independent variables)		Question items (consist of dependent variables)						
Main category	Comparison categories	1	2 [#]	3	4	5	6	7 [#]
Employment status	Regular vs Non-Regular	0.185	<0.001	<0.001	<0.001*	<0.001	<0.001	<0.001
Gender	Male vs Female	0.003	<0.001	<0.001	0.141*	0.083	<0.001	<0.001
Marital status	Single vs Married	<0.001	<0.001	<0.001	0.007*	0.001	<0.001	<0.001
Age	5 categories	0.160**	<0.001*	0.392**	0.165**	0.001**	0.029**	0.065**
Years employed	5 categories	0.164**	0.001**	0.882**	<0.001*	0.082**	0.027**	0.052**
No. pharmacists	4 categories	0.274**	0.007**	0.812**	0.552**	0.214**	0.849**	0.669**
No. companies	5 categories	0.258**	<0.001*	0.009**	0.272**	<0.001**	0.654**	0.322**
No. pharmacies	5 categories	0.188**	<0.001*	0.216**	0.029**	0.001**	0.695**	0.792**

Question items:

1. Reasons for being a community pharmacist 2. Reasons for choosing current workplace 3. Most important work-related concerns 4. Job satisfaction 5. Reasons for dissatisfaction with current workplace 6. Future work plans 7. Reasons for turnover

[#] Listed reasons rank first from top three reasons * Wilcoxon rank-sum test ** Kruskal-Wallis test Unmarked Chi-square test

 p<0.05

Relationships between job satisfaction and all questionnaire items

The relationships between job satisfaction and all questionnaire items were analyzed using Quantification Theory 1. However, the adjusted coefficient of determination (R^2) for this analysis came to 0.199, clearly indicating an unreliable analysis result (usually more than 0.5 is preferable). Therefore, it was not accepted that this specific item necessarily affected job satisfaction.

Relationships between future work plans

Next, relationships between future work plans and all questionnaire items were analyzed by Quantification Theory 2 (Table 16, Figure 3). The correlation ratio (η^2) between “stay until retirement” and “stay for less than 5 years” was 0.471 ($p < 0.001$), a moderate correlation. Items that appeared to affect future work plans were gender ($p < 0.001$), age ($p < 0.001$), job satisfaction ($p < 0.001$), years employed ($p = 0.001$) and employment status ($p = 0.040$). A category score (+) indicates influence of “stay until retirement” and (-) “stay for less than 5 years” (Figure 3). The categories of age (more than 40 years), job satisfaction (80–100 points), years employed (more than 10 years), and gender (male), in order of strength, also affected future work plans. On the other hand, the categories of job satisfaction (less than 70 points) and age (26–29 years) may have influenced “stay for less than 5 years.”

**Table 16. Future work plans by demographics/question items of community pharmacists
(all employment categories)**

Demographic/question items		Future work plans (%)				
	Categories	n	1	2	3	4
	Total	1,568	7.6	30.1	26.0	36.3
Employment status	Regular	1,257	7.4	31.7	27.3	33.6
	Non-regular	311	8.4	23.5	20.9	47.2
Gender	Male	496	12.1	41.7	21.6	24.6
	Female	1,072	5.5	24.7	28.1	41.7
Marital status	Single	947	4.8	29.1	30.7	35.4
	Married	621	11.9	31.6	18.8	37.7
Age	22-25	374	3.5	26.7	38.5	31.3
	26-29	441	3.6	29.5	31.5	35.4
	30-34	322	6.8	34.5	19.3	39.4
	35-39	161	8.1	35.4	14.9	41.6
	40-	270	20.4	27.4	14.4	37.8
Years employed in the current workplace	-1	363	5.0	30.3	30.9	33.8
	2-3	453	4.2	26.9	33.3	35.6
	4-5	261	5.7	31.8	24.1	38.4
	6-9	348	9.8	34.2	18.7	37.3
	10-	143	23.1	26.6	11.9	38.4
Job satisfaction (n=1,565 matched future work plans and job satisfaction)	80-100	280	16.1	47.1	12.2	24.6
	70-79	667	8.1	36.1	23.4	32.4
	60-69	428	3.3	20.1	34.3	42.3
	50-59	135	3.8	8.1	37.0	51.1
	<50	55	1.8	3.6	38.2	56.4

Answer: 1. Stay until retirement 2. Stay for long term (more than 5 years)
3. Stay for less than 5 years 4. Undecided

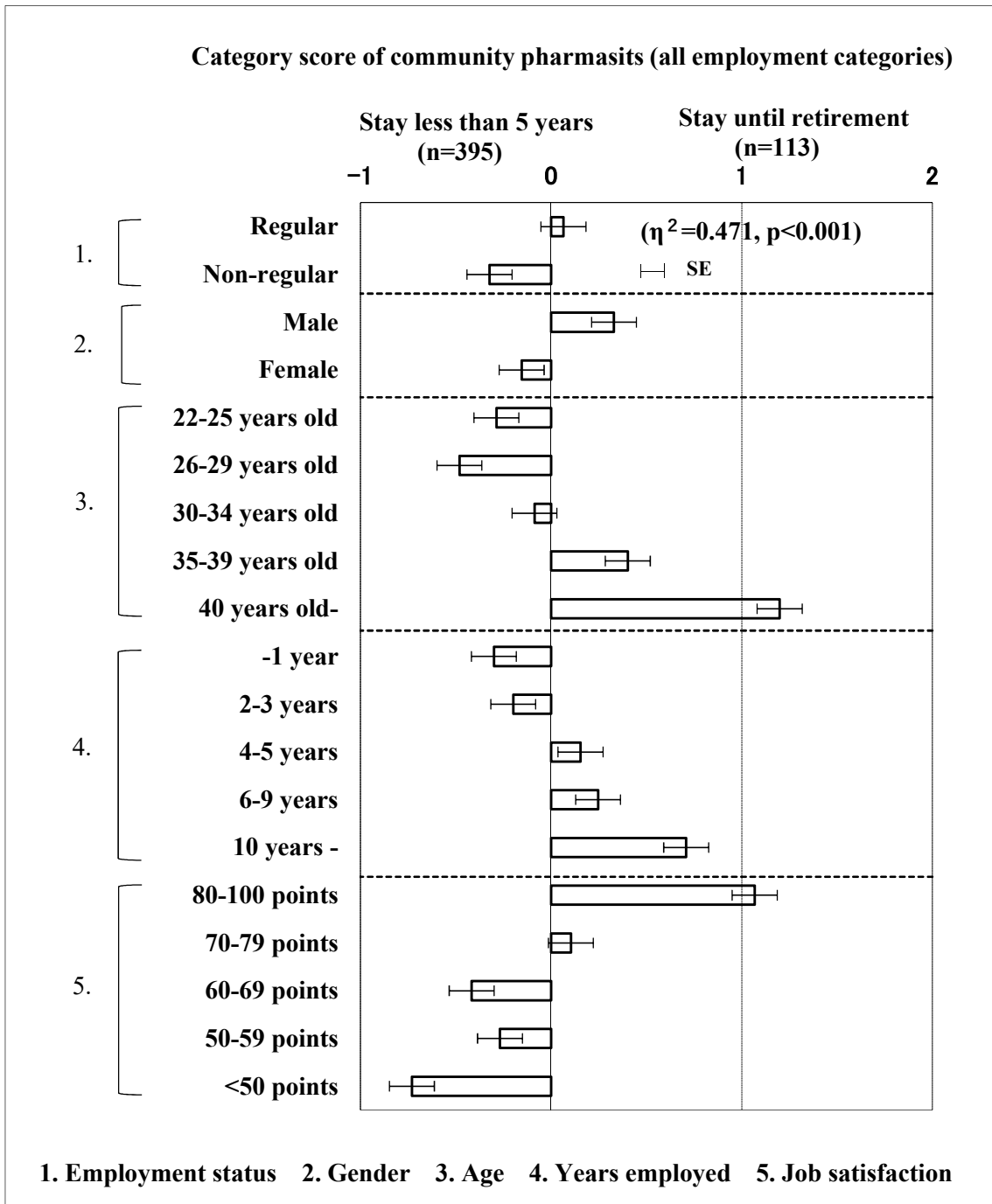


Figure 3. Category score of items related to future work plans between “stay less than 5 years” and “stay until retirement” in community pharmacists

3.3.2. Survey of hospital pharmacists

Demographic data

The rate of acceptable data was 71.7% overall: 440 of 614 surveyed pharmacists in 66 hospitals. The demographic data are displayed in Table 13: regular employment 97.5%; female 59.8%; single 70.0%; less than 29 years 60.6%; and, less than 5 years employed 62.5%.

Reasons for being a hospital pharmacist and choosing the current workplace

A summary of attitudes toward work is given in Table 14. The main reasons for being a hospital pharmacist were the “desire to work in the healthcare field” (46.9%) and the “opportunity for personal development” (32.4%). The primary reason for choosing the current workplace was also the “opportunity for personal development” (20.7%).

Job satisfaction and dissatisfaction

Levels of job satisfaction were categorized as in 3.3.1., in brackets of 80–100, 70–79, 60–69, 50–59, and <50 points; approximately 95% of the respondents indicated satisfaction above 50 points. “Salary” (23.0%) and “employment terms and conditions” (22.1%) were two major reasons for dissatisfaction.

Future work plans and reason for turnover

Only 5.5% of respondents answered that they intended to “stay until retirement” under their future work plans. “Lack of personal development” was a major reason given for turnover.

Demographic differences in work attitudes

There were differences concerning attitude toward work among demographic categories (Table 17) in all items except one—main reason for being a hospital pharmacist. Job satisfaction indicated significant differences in age ($p=0.038$) and years employed

($p < 0.001$) in all respondents, while future work plans showed significant differences by five factors among all respondents: employment status ($p = 0.003$), gender ($p = 0.011$), marital status ($p < 0.001$), age ($p = 0.040$), and years employed ($p = 0.023$).

The largest proportion of future work plans by gender and marital status were: “more than 5 years” among males (33.0%) and married people (32.8%), and “less than 5 years” among females (40.2%) and single people (41.2%) (see Table 18). “Stay until retirement” was the top answer: 14.6% among those employed for more than 10 years, and higher among those employed for other periods.

Table 17. Differences of work attitudes among demographic of hospital pharmacists (all employment categories)

Category (independent variables)		Question items (consist of dependent variables)						
Main category	Comparison categories	1	2 [#]	3	4	5	6	7 [#]
Employment status	Regular vs Non-Regular	0.158	<0.001	0.001	0.123*	0.706	0.003	0.344
Gender	Male vs Female	0.452	0.115	0.081	0.184*	0.698	0.011	0.310
Marital status	Single vs Married	0.051	0.064	<0.001	0.601*	0.055	<0.001	0.037
Age	5 categories	0.308**	<0.001*	0.681**	0.038**	0.571**	0.040**	0.150**
Years employed	5 categories	0.541**	0.054**	0.430**	<0.001*	<0.001**	0.023**	0.238**
No. pharmacists	4 categories	0.185**	0.169**	0.739**	0.336**	0.450**	0.864**	0.103**
No. companies	5 categories	0.337**	0.192**	0.829**	0.710**	0.729**	0.065**	0.354**
No. pharmacies	5 categories	0.214**	0.252**	0.646**	0.542**	0.604**	0.786**	0.599**

Question items:

1. Reasons for being a community pharmacist 2. Reasons for choosing current workplace 3. Most important work-related concerns 4. Job satisfaction 5. Reasons for dissatisfaction with current workplace 6. Future work plans 7. Reasons for turnover

[#] Listed reasons rank first from top three reasons * Wilcoxon rank-sum test ** Kruskal-Wallis test Unmarked Chi-square test

 $p < 0.05$

Table 18. Future work plans by demographics/question items of hospital pharmacists

Demographic/question items		Future work plans (%)				
	Categories	n	1	2	3	4
	Total	437	5.5	26.3	35.5	32.7
Employment status	Regular	426	5.4	26.7	36.4	31.5
	Non-regular	11	9.1	9.1	0.0	81.8
Gender	Male	176	7.4	33.0	28.4	31.2
	Female	261	4.3	21.8	40.2	33.7
Marital status	Single	306	2.6	23.5	41.2	32.7
	Married	131	12.3	32.8	22.1	32.8
Age	22-25	135	0.7	28.9	38.5	31.9
	26-29	130	2.3	20.0	46.9	30.8
	30-34	72	5.6	27.8	33.3	33.3
	35-39	46	2.2	34.8	21.7	41.3
	40-	54	27.8	25.9	14.8	31.5
Years employed in the current workplace	-1	45	4.5	44.4	17.8	33.3
	2-3	143	0.7	22.4	51.0	25.9
	4-5	85	5.9	22.4	36.4	35.3
	6-9	75	4.0	18.7	34.7	42.6
	10-	89	14.6	33.7	19.1	32.6
Job satisfaction (n=1,565 matched future work plans and job satisfaction)	80-100	67	13.4	43.4	11.9	31.3
	70-79	157	4.5	33.8	36.2	25.5
	60-69	133	3.8	20.3	38.3	37.6
	50-59	55	3.7	9.1	54.5	32.7
	<50	25	4.0	4.0	36.0	56.0

Answer: 1. Stay until retirement 2. Stay for long term (more than 5 years)
3. Stay for less than 5 years 4. Undecided

Relationships between job satisfaction and all questionnaire items

The relationships between job satisfaction and all questionnaire items were analyzed by Quantification Theory 1, as noted. The adjusted coefficient of determination (R^{*2}) in this analysis came to 0.239, clearly a weak correlation (usually more than 0.5 is desirable). Therefore, no specific items were recognized as factors related to job satisfaction.

Relationships between future work plans and all the questionnaire

Next, relationships between future work plans and all the questionnaire items were

analyzed by Quantification Theory 2. All correlation ratios (η^2) among each pair of answers (items) for future work plans were above 0.25, which is preferable. The correlation ratio between “stay until retirement” and “stay for less than 5 years” was 0.634 ($p < 0.001$), a fairly strong correlation. Possible items affecting future work plans “stay until retirement” as against “stay for less than 5 years” were: reasons for dissatisfaction ($p = 0.003$), age ($p = 0.013$), years employed ($p = 0.049$), and job satisfaction ($p = 0.046$). That is, the scores for those items indicate the intensity of those factors to distinguish between the response “stay until retirement” and the response “stay for less than 5 years” (Figure 4). Responses “more than 40 years” in the category of age and 80–100 points in job satisfaction had positive influences on “stay until retirement”. On the other hand, “22–25 years” and “<50 points” had positive influences on “stay for less than 5 years.”

Age was one of the factors distinguishing “stay until retirement” from “stay for long term (more than 5 years)” ($p < 0.001$), and “stay for less than 5 years” ($p = 0.013$). Job satisfaction also clarified whether respondents answered “stay for less than 5 years” instead of “stay until retirement” ($p = 0.046$).

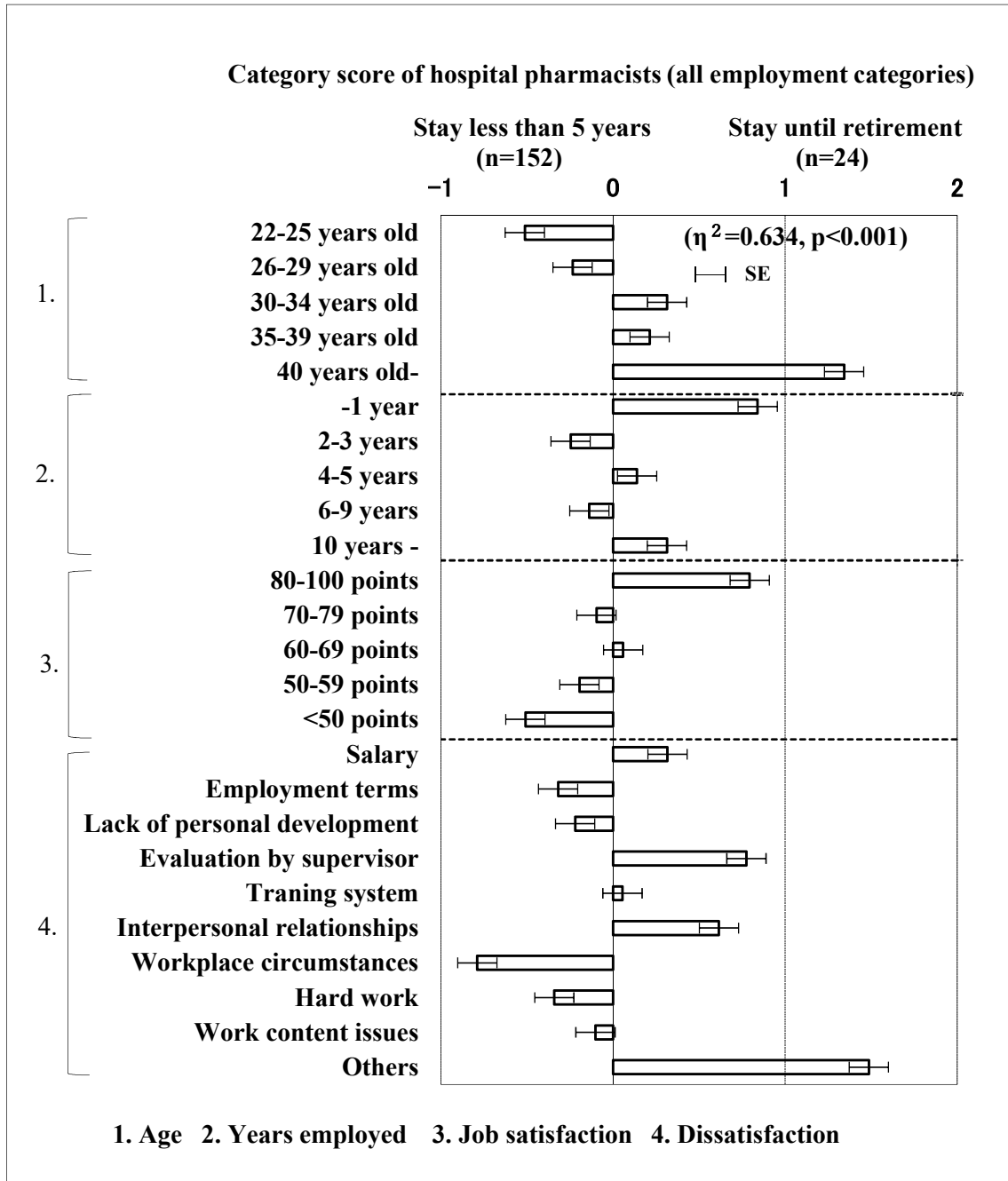


Figure 4. Category score of items related to future work plans between “stay less than 5 years” and “stay until retirement” in hospital pharmacists

3.4. Comparison of work attitudes between community and hospital pharmacists who are regular employees

3.4.1. Introduction

Overall pictures of the “work attitudes” of community pharmacists and hospital pharmacists were described in 3.3.1. and 3.3.2. and showed considerably higher levels of job satisfaction in these groups than in workers in general. International research on work attitudes among pharmacists has revealed pharmacists to be satisfied with their jobs,³¹ and job satisfaction has been described as an important factor influencing pharmacists’ perspectives on the quality of their worklife.³² Future work plans are affected by various individual and organizational factors.³³ These results, however, revealed these pharmacists’ work attitudes regardless of regular or non-regular employment status. This part examined whether all pictures and work attitudes of community pharmacists and hospital pharmacists with regular employment status only can tend to similar nature in described in 3.3.1. and 3.3.2., and explored differences between community pharmacists and hospital pharmacists.

3.4.2. Methods

From the data for 1,585 community pharmacists and 440 hospital pharmacists surveyed, results for regularly employed pharmacists were extracted. The number of analyzed answers was 1,270 from community pharmacists and 429 from hospital pharmacists. Analysis were performed with the methods mentioned in 3.2. The amount of effective data for each question varied, and missing or uncertain responses were excluded. A p-value less than 0.05 was defined as statistically significant *a priori*.

3.4.3 Results

Demographic background and summary of work attitudes among community

pharmacists and hospital pharmacists with regular employment extracted from surveyed data are indicated in Table 19 and Table 20, respectively.

Table 19. Demographic characteristics of respondents (regular employment)

Demographic characteristics item	Category	Community pharmacist (%)	Hospital pharmacist (%)
Employment status	Regular	1,270 (100.0)	429 (100.0)
Gender	Male	486 (38.3)	177 (41.7)
	Female	784 (61.7)	252 (58.7)
Marital status	Single	909 (71.6)	308 (71.8)
	Married	361 (28.4)	121 (28.2)
Age	22-25	370 (29.1)	137 (31.9)
	26-29	410 (32.3)	130 (30.3)
	30-34	254 (20.0)	69 (16.1)
	35-39	105 (8.3)	45 (10.5)
	40-	131 (10.3)	48 (11.2)
Years employed in the current workplace	-1	290 (22.8)	45 (10.5)
	2-3	369 (29.1)	142 (33.1)
	4-5	208 (16.4)	84 (19.6)
	6-9	296 (23.3)	74 (17.2)
	10-	107 (8.4)	84 (19.6)
Number of pharmacists in the current workplace	-4	629 (49.5)	75 (17.5)
	5-9	459 (36.1)	82 (19.1)
	10-14	147 (11.6)	65 (15.2)
	15-	35 (2.8)	207 (48.3)
Number of workplaces changed since graduation	1	782 (61.6)	318 (74.1)
	2	240 (18.9)	64 (14.9)
	3	131 (10.3)	22 (5.1)
	4	64 (5.0)	14 (3.3)
	5-	53 (4.2)	11 (2.6)
Number of pharmacies worked since graduation	1	983 (77.4)	354 (82.7)
	2	181 (14.3)	49 (11.4)
	3	70 (5.5)	15 (3.5)
	4	20 (1.6)	8 (1.9)
	5-	16 (1.3)	2 (0.5)

Table 20. Summary of work attitude (regular employment)

Item/category	C (%)	H (%)	Item/category	C (%)	H (%)
Main reason for being a C/H	n=1,266	n=424	Reasons for dissatisfaction	n=1,244	n=421
1. Practical utilization of pharmacist	42.0	8.5	1. Salary	27.3	22.5
2. Salary	3.5	0.2	2. Employment terms and conditions	32.7	22.3
3. Opportunity for personal development	16.3	33.3	3. Lack of personal development	2.1	2.9
4. Desire to work in health care field	21.2	46.8	4. Evaluation by supervisor	1.2	1.7
5. Continuous learning	8.5	7.8	5. Employee training system	1.2	7.1
6. Easy work	0.9	0.0	6. Interpersonal relationships	3.6	5.2
7. Others (C vs H p<0.001)	7.6	3.4	7. Workplace circumstances	5.8	7.4
			8. Hard work	13.6	17.6
Reasons for choosing current workplace*	n=1,266	n=429	9. Work content issues	5.7	5.7
1. Well-known large group	41.2	19.8	10. Others (C vs H p<0.001)	6.8	7.6
2. Policy and mission	8.5	15.9			
3. Listed organization	1.9	0.0	Future work plans	n=1,257	n=426
4. Salary	1.9	1.2	1. Stay until retirement	7.4	5.4
5. Employment terms and conditions	9.8	4.0	2. Stay for long term (more than 5 years)	31.7	26.8
6. Opportunity for personal development	7.7	21.2	3. Stay for less than 5 years	27.3	36.4
7. Employee training system	13.3	0.9	4. Undecided (C vs H p=0.003)	33.6	31.4
8. Convenient commute	7.3	17.7			
9. Recommendation from senior or friend	4.1	9.6	Reasons for turnover *	n=461	n=98
10. Others (C vs H p<0.001)	4.3	9.7	1. Salary	9.3	6.1
* Listed reasons ranked first from top three			2. Employment terms and conditions	21.5	11.2
			3. Lack of personal development	17.6	34.7
Most important work-related concerns	n=1,265	n=428	4. Evaluation by supervisor	0.7	0.0
1. Salary	6.5	3.5	5. Employee training system	1.7	1.0
2. Work content	37.3	43.0	6. Interpersonal relationships	8.9	9.2
3. Employment stability	7.5	5.4	7. Workplace circumstances	1.1	1.0
4. Work schedule	5.3	3.7	8. Work content issues	8.5	4.1
5. Work and family life balance	13.0	15.9	9. Family issues	15.6	16.3
6. Workplace circumstances	1.8	1.6	10. Others (C vs H p=0.019)	15.1	16.4
7. Interpersonal relationships	27.6	25.0	* Listed reasons ranked first		
8. Others (C vs H p=0.025)	1.0	1.9	from top three		
Job satisfaction	n=1,268	n=429			
1. 80-100 points	15.1	14.9			
2. 70-79 points	42.9	35.9			
3. 60-69 points	28.9	30.5			
4. 50-59 points	9.1	12.6			
5. <50 points (C vs H p=0.013)	4.0	6.1			

C: community pharmacist

H: hospital pharmacist

Reason for career choice

The main reason respondents were working in their career was “utilizing pharmacist licensure” (42.0%) in community pharmacists and “desire to work in healthcare field” (46.8%) in hospital pharmacists, covering close to 50% of responses in each case. Summing the two reasons in each group showed more than 60%. In addition, “opportunity of personal development” was also frequently mentioned, in both groups but especially in hospital pharmacists. On the other hand, “high salary” as a motivation was very infrequent. The order of these results in all picture and regular employment were same. There was a significant difference in this regard between community pharmacists and hospital pharmacists ($p < 0.001$).

Important considerations for work attitudes

Important concerns in community pharmacists were “work content” (37.3%), “interpersonal relationships” (27.6%), and “work and family life balance” (13.0%), and in hospital pharmacists, “work content” (43.0%), “interpersonal relationship” (25.0%), and “work and family life balance” (15.9%). Differences were found in both groups ($p = 0.025$). The overall picture and regular employment implied similar tendency.

Job satisfaction

With responses of more than 50 out of 100 points defined as indicating satisfaction, 96.0% of community pharmacists and 93.9% of hospital pharmacists are satisfied with their job. A similar tendency was demonstrated in the overall picture and for those in regular employment. Community pharmacists and hospital pharmacists indicated a significant difference ($p = 0.013$).

Dissatisfaction

“Employment terms and conditions” (32.7%) and “salary” (27.3%) for

community pharmacists, and “salary” (22.6%) and “employment terms and conditions” (22.3%) for hospital pharmacists were the major areas of dissatisfaction. There demonstrated significant between community pharmacists and hospital pharmacists ($p < 0.001$). Overall picture and these results indicated a similar tendency.

Future work plan

“Future plans” covers how long respondents intend to work in their current workplace or, conversely, if they intend to leave their job; administrators in community and hospital pharmacy are extremely interested in this question. In this study, 40% of the community pharmacists and 40% of the hospital pharmacists were committed to their workplace long-term (anticipating staying five years or more). Thus, it seems that not many people are planning for a long-term commitment. There was a significant difference between community and hospital pharmacists ($p = 0.003$).

Relationships between job satisfaction and all questionnaire items

The relationships between job satisfaction and all questionnaire items were analyzed by Quantification Theory 1. No specific items were isolated as factors related to job satisfaction in community pharmacists ($R^2 = 0.204$) or hospital pharmacists ($R^2 = 0.254$). The adjusted coefficient of determination (R^2) clearly indicated only a weak correlation (usually more than 0.5 is desirable). These results, which could not be seen in the relationship between job satisfaction and other items, were the same result of overall picture.

Relationships between future work plans and all questionnaire items

Relationships between future work plans and all questionnaire items were analyzed by Quantification Theory 2. The strongest correlation ratio (η^2) among each pair of answers (items) for future work plans was $\eta^2 = 0.537$ ($p < 0.001$) in community

pharmacists and $\eta^2=0.620$ ($p<0.001$) in hospital pharmacists, in both cases far above 0.25, which is preferable, between “stay until retirement” and “stay for less than 5 years.” Items appearing to affect future work plans in community pharmacists were gender ($p<0.001$), age ($p<0.001$), number of workplaces changed ($p=0.026$), years employed ($p=0.005$), job satisfaction ($p<0.001$), and important work-related concerns ($p=0.011$) (Figure 5). In overall picture of community pharmacists, gender ($p<0.001$), age ($p<0.001$), job satisfaction ($p<0.001$), years employed ($p=0.001$) and employment status ($p=0.040$) stood out as possible factors. Employment status was influential because of the approximately 20% non-regular employee pharmacists included. In hospital pharmacists, possible influences included reasons for age ($p=0.013$), years employed ($p=0.049$), job satisfaction ($p=0.046$), and dissatisfaction (Figure 6). Contrary to community pharmacists, overall picture of hospital pharmacists included only 2.5% pharmacists with non-regular employment, so the results for the possible factors were similar. Age, years employed, and job satisfaction were thus common items affecting work plans among both groups.

Also found in the results were that the categories of “more than 35 years old,” “more than 10 years employed,” and “more than 80 points of satisfaction” in community pharmacists (Figure 5) and “more than 40 years old,” “less than 1 year employed,” and “more than 80 points of satisfaction” in hospital pharmacists (Figure 6) tended to indicate “until retirement.”

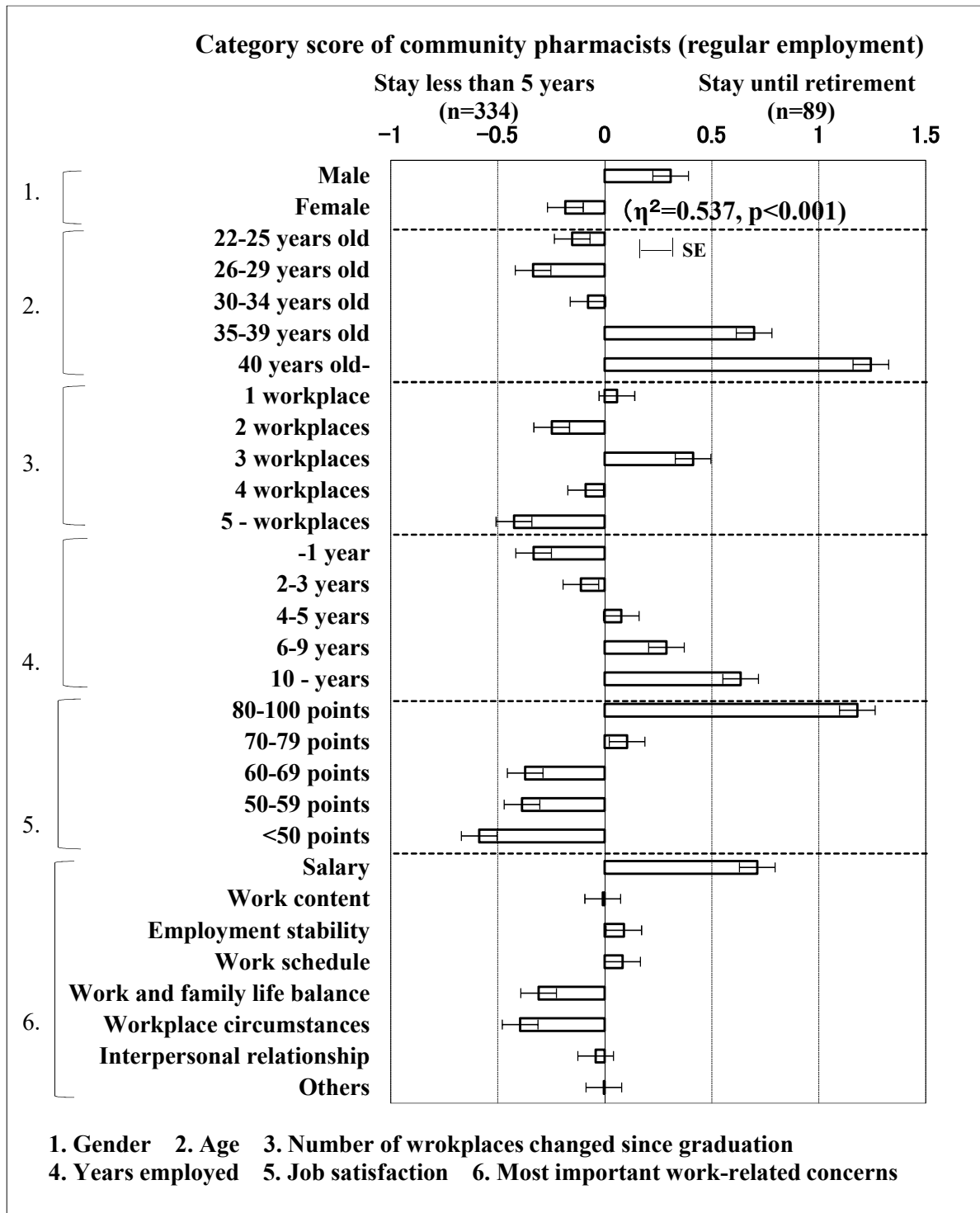


Figure 5. Category score of items related to future work plans between “stay less than 5 years” and “stay until retirement” in community pharmacists with regular employment

Table 21. Job satisfaction

Degree	This survey (%)				MHLW Survey* (%)		
	Community		Hospital		Rating scale	College graduates	Expert workers/ Technologists
	All	Regular	All	Regular			
80-100 points	17.8	15.1	15.2	14.9	Satisfaction	27.3	23.8
70-79 points	42.8	42.9	36.1	35.9	Less satisfaction	38.9	36.9
60-69 points	27.3	28.9	30.2	30.5	Neither	17.0	19.1
50-59 points	8.6	9.1	12.5	12.6	Less dissatisfaction	11.2	14.1
<50 points	3.5	4.0	5.9	6.1	Dissatisfaction	5.1	5.5
					NA	0.5	0.6

* Ministry of Health, Labour and Welfare, Survey on Workers Who Changed Jobs (2006), www.mhlw.go.jp/houdou/2007/08/h0808-2.html (cited 2008 Oct 30)

3.4.4. Discussion

It is worth noting that the rate of regular employees (80.1%) in this study is higher than that (57.7%) of pharmacists in the retail sale sector overall.³⁶ Also, female pharmacists amounted to 68.4% in this study and 73.9% in the MHLW survey (of community pharmacists, excluding owners).³⁷ Note also that the age of more than half of the present sample was less than 29 years, considerably younger than the average age of community pharmacists in Japan (42.1 years).³⁷ These results clearly show that female pharmacists constitute an important part of the workforce in community pharmacies and that chain pharmacies are able to recruit younger pharmacists. Community pharmacists, it seems, are presently able to obtain regular employment positions with ease; however, with pharmacy graduates increasing by 40–50% from 2012, the situation may not be so clear cut in the near future.

The proportion of regular employees among hospital pharmacists (97.5%) in this study was higher than that (80.1%) found among community pharmacists, as described above. Female hospital pharmacists amounted to 59.8% in this study, as against 66.0% in

Japan as a whole.³⁸ Approximately 90% of respondents were below 40 years of age, and thus also below the average age of Japanese hospital pharmacists (41.5 years).³⁸ These results suggest that regular employees and younger pharmacists are key players in group hospitals, perhaps because they are more committed to working under demanding conditions, such as on night duty or on tight schedules. Pharmacists in the Tokushukai Group have to work hard because, in line with hospital group policy, they provide dedicated pharmacy services both to ambulatory patients (dispensing, including patient care) and to inpatients (dispensing, IV mixture, drug information, pharmacy administration with inventory, and clinical pharmacy services). It is likely that the working circumstances of this group are less desirable for female pharmacists. Obtaining positions as hospital pharmacists, it seems, is more difficult because the number of vacancies has recently decreased. At the same time, hospital managers prefer to employ pharmacists who can easily adapt to required work conditions.

In this study, the main reasons given for being a community pharmacist were to engage in the “practical utilization of pharmacist license” and “desire to work in healthcare,” indicating a strong career commitment among community pharmacists. On the other hand, the main reasons for being a hospital pharmacist were found to be the “desire to work in the healthcare field” and the “opportunity for personal development”; together these evoke a thoroughly professional commitment and strong motivation for individual career development. “Opportunity of personal development” was the key word raised by many pharmacy students as well as pharmacists.

The top reason for choosing the current workplace was that it was a “well-known large company,” followed by good “employment terms and conditions” for a community pharmacist, which suggest that the community pharmacists of large chain pharmacies

desire stable employment. Reasons such as “personal development,” “well-known large company,” and (agreement with the group’s) “policy and mission,” indicate that pharmacists’ career expectations are tied up with the nature of the organizations that employ them and where they choose to make their careers.

It is notable that “work content” was the most important concern for more than 30% (37.3% of regular employment) of the community pharmacists and “salary” for only 5.8% (6.5% of regular employment), and for more than 40% (43.0% of regular employment) of the hospital pharmacists, and “salary” for only 3.4% (3.5% of regular employment). Thus, both occupations indicated comparable results; interestingly, “salary” was also the highest-ranked reason for dissatisfaction. Salary was also found to be the major cause of dissatisfaction among most workers, regardless of occupation.³⁹

Pharmacist job satisfaction studies outside Japan regarding have respectively shown 67.2%,³¹ 68%,⁴⁰ and 90.7%⁴¹ of pharmacists surveyed to be satisfied with their jobs, and 78%,⁴⁰ 90%,⁴² and 60% of hospital pharmacists were satisfied with their current jobs, as against 57% of community pharmacists.⁴³ Thus, hospital pharmacists seem quite satisfied with their jobs, whatever their circumstances.^{10,44}

In this study, approximately 90% of the community and hospital pharmacists and respondents stated a level of satisfaction above 60 points. Following the standard set by the MHLW study, in which satisfaction scores of 50–59 points indicate a neutral response, approximately 95% of both groups of respondents in this study were satisfied³⁹ (Table 21). This makes pharmacists much more satisfied with their job than college graduate workers, expert workers, technologists,³⁹ or the international pharmacists mentioned above. This is higher than for ordinary employees and higher than for other countries, and thus indicates a highly positive level of job satisfaction among hospital and community

pharmacists in relative, as well as absolute, terms. However, job satisfaction rates differed significantly according to age and years employed.

“Salary” was the major reason for dissatisfaction (25.3%) in general, regardless of occupation or gender.³⁹ This survey also showed that 27.5% (27.3% of regular employment) of the community pharmacists and 23.0% (22.5% of regular employment) of the hospital pharmacists were dissatisfied with “salary”, which is interesting given that only 5.8% (6.5% of regular employment) of the community pharmacists and 3.4% (3.5% of regular employment) of the hospital pharmacists reported that salary was an important work-related concern.

Regarding future work plans, in this study, in spite of high job satisfaction, only 7.6% (7.4% of those in regular employment) of community pharmacists or 5.5% (5.4% in regular employment) of hospital pharmacists expressed the belief that they would remain in their current workplace until retirement. In contrast, however, approximately 60% of new college graduates wished to stay in their current job until retirement.⁴⁵ Only a few pharmacists believed that they would continue working at their current workplace until retirement in this study. Pharmacists tend to commit to their profession rather than to the workplace itself. This result suggests that pharmacists tend to devote themselves to their profession and to feel higher job satisfaction—and as a result to develop an enthusiastic and professional mindset.

On the whole, in this study, factors affecting job satisfaction could not be reliably isolated. However, it has been reported in another Japanese study, in hospital contexts, the main factor has been found to be “fair evaluation” in physicians, “cooperative environment” in nurses, “performance evaluation with career development” and “innovative work environment” in pharmacists,⁷ as well as the feeling that respondents

were able to make effective use of their abilities, and, in a study outside Japan, professional recognition.⁴⁶

Outside Japan, studies discussing the relationship between job satisfaction and job content show that pharmacists would like to spend more time in consultation and drug utilization management than in dispensing medications,^{31,34} and that job satisfaction was negatively correlated to the amount of time spent dispensing.⁴⁶ The job satisfaction of hospital pharmacists also increased in proportion to the time spent in clinical pharmacy activities.^{47,48} Further, job satisfaction was strongly related to the risk of making dispensing errors.⁴⁹ Researchers outside Japan have found that clinical pharmacy activities significantly increase job satisfaction among hospital pharmacists.⁴⁷ The above studies emphasize that clinical activities and pharmacy management contribute significantly to job satisfaction among hospital pharmacists.

Today in Japan, community pharmacies are undergoing staffing and retention problems, and also staff turnover is a persistent issue in the pharmacy sector and pharmacist labor market in the US.³² Pharmacists tend to leave their workplace due to desire to change or because of stress.⁴⁰ It has been indicated that age, job satisfaction, years employed, and gender all influence community pharmacists' future work plans, and confirmed that these factors are very important for pharmacy management to allocate staff and operate pharmacies efficiently. Key factors for future work plans of hospital pharmacists implied age, years employed, job satisfaction and dissatisfaction.

Regarding turnover, reasons commonly given were “salary” for males, “family issues” for females, and “employment terms and conditions” for both, in the other study³³ and in this study. In particular, “lack of personal development” was a specific reason given by male community pharmacists and all hospital pharmacists for changing jobs in this

study.

In international reports, the annual turnover rate of women (15%) is significantly higher than that of men (9.7%), while the average term-in-post among women (25.2 months) is significantly less than that among men (56.5 months).³² Several factors explain this turnover: salary, relationships with co-workers,³³ job satisfaction, and organizational commitment.⁵⁰ A good salary and good relationships with coworkers are the most common reasons given for staying in a job,⁴⁰ while job satisfaction and intention to leave a pharmacy are also influenced by respondents' strength of motivation as pharmacists.⁵¹ Enrolling in continuous educational programs and precepting students also affects job and career satisfaction.⁵² Increased job satisfaction and organizational commitment decrease intention to seek new employment.⁵⁰ Family-friendly flexible work conditions might also help maintain a steady workforce, possibly more than simply raising salaries.⁵³ "Personally rewarding" was the most important factor for pharmacists choosing their first position in the 1980s,⁵⁴ while the work environment is the most important factor in the view of today's pharmacy students.²⁰ Pharmacists' work attitudes have been shifting, and becoming more similar between the US, the UK, and Japan.

The finding that "personal development" was the key issue for community and hospital pharmacists considering their long-term career has also been confirmed by a study undertaken outside Japan.⁴⁴ Increased monetary rewards are unlikely to become a reality given the degree of control exercised by national health insurance systems in Japan. Management was an important (and significant) contributor to job satisfaction among community and hospital pharmacists.^{49,55}

3.4.5. Conclusion

This study has provided a descriptive overview of work attitudes among

community pharmacists in large chain pharmacies and hospital pharmacists in group hospitals in Japan. “Personal development” is a key issue for both pharmacists throughout their careers, starting in pharmacy school. Pharmacists were found to be dedicated to their profession, highly motivated and (relative to other professions in general) satisfied with their work, prone to changing jobs, and disproportionately female. Pharmacy managers and hospital administrators need to try to understand the mindset of pharmacists: their concerns, what motivates them, and how best to utilize their professional ability and skills for the benefit of patients and other healthcare professionals. The study has also indicated that pharmacists’ future work plans may be affected by age, years employed, and job satisfaction common items influencing both community pharmacists and hospital pharmacists. It is hoped that the present findings may serve as a fundamental resource for helping understand why Japanese pharmacists feel the way they do about their work, and may complement other research in this area. This study prepares the ground for further research which focus on job satisfaction, turnover and future work plans in order to catch up with the current international research regarding work attitudes of pharmacists.

Limitation

Only four chain pharmacies with approximately 600 community pharmacies and 66 hospitals in one hospital group were surveyed; they of course do not represent the whole community pharmacy and hospital pharmacies in Japan.

3.5. Cluster analysis of pharmacists' work attitudes

3.5.1. Introduction

In general, people are interested in their colleagues' attitudes related to their occupations or jobs. Pharmacists, their management, and pharmacy students are no exception. Pharmacists require reasonable job satisfaction to offer good service to their patients.^{7,30} A few studies on pharmacists' work attitudes have been conducted in Japan; they have shown that community pharmacists are somewhat dissatisfied with their situation, in ways that vary significantly by gender and years of experience.⁸ Hospital pharmacists express dissatisfaction with their workplace situation, but still consider their job worthwhile.¹⁰ Conversely, previous studies expressed a considerably higher level of job satisfaction for community and hospital pharmacists as compared with other workers. Internationally, research with regard to work attitudes among pharmacists has revealed pharmacists to be satisfied with their jobs,³¹ and job satisfaction has been described as a key factor influencing pharmacists' perspectives on the quality of worklife.³² Future work plans are affected by various individual and organizational factors.³³

In the previous 3.4.3., overall, no specific questionnaire items showed relationships with job satisfaction and questionnaire items. However, relationships between future work plans and several questionnaire items were recognized, for both types of pharmacists with regular employment surveyed. For community pharmacists who were regular employees, factors that appeared to affect plans to remain until retirement as against for less than five years were gender, age, number of years employed, job satisfaction, important work-related concerns, and number of workplaces changed (Figure 5). For hospital pharmacists with the same status, the factors were age, number of years employed, job satisfaction, and reasons for dissatisfaction (Figure 6). These

results might support the assertion that work attitudes differ depending on individual background.^{8,33}

In the few previous reports regarding work attitudes among pharmacists in Japan, no cluster analysis of factors could not be found. This lack led the author to explore the groups in the two samples through clustering, in order to classify the work attitudes of community and hospital pharmacists based on previous studies and help staff pharmacists and management come to mutually beneficial arrangements.

3.5.2 Methods

Data extracted for this study

As in the previous analyses of the survey data, missing answers were excluded from the data analysis, and so from the overall responses, those for 1,228 community pharmacists and 419 hospital pharmacists who were regular employees and had answered the eight questions fully were used.

To develop samples that would demonstrate the work attitudes of a majority of pharmacists, data were extracted from samples of regular employees, as in the comparative analysis in 3.4. Five items, namely, number of pharmacists in the current workplace, number of workplace changes, number of pharmacies served since graduation, primary reason for being a community or hospital pharmacist, and reasons for leaving the previous workplace, were dropped, as they did not meet the purpose of the secondary analysis. This left 51 categories (answers) from eight items (questions): gender/marital status (four categories: single male, married male, single female, and married female); age (five categories); number of years employed in the current workplace (five categories); reasons for choosing the current workplace (ten categories); most important work-related concerns (eight categories); degree of job satisfaction (five categories);

reasons for dissatisfaction with the current workplace (ten categories); and future work plans (four categories).

Analytical method

Quantification Theory 3 is an analysis method for grasping categorical data's mutual relationships without an external criterion, demonstrating the similarity between the categories in an item (category score: distance among items) and similarity between samples (sample score: distance among samples).⁵⁶ This is one method of classifying samples based on the similarity of answers to items (questions) across several categories.⁵⁷ Theory 3 assumes that samples and categories with similar answer patterns might be located in roughly proximate areas and possess similar characteristics.⁵⁷ Clustering (Ward's method) classifies complex multivariate data, grouping the samples according to sample scores on a multidimensional axis (distance among samples). The analysis conducted here is a so-called sample cluster analysis, which is clustered in multidimensional space by the score of each sample, calculated using each category's score (in turn) calculated using Quantification Theory 3.

In this study, a hierarchical analysis was not considered, as data were unidentified (no pharmacist or workplace names), and the sample of approximately 600 community pharmacies and 66 hospital pharmacies was large. Therefore, the effect on the pharmacy environment appeared to be small.

Esumi Co., Ltd. (Tokyo) conducted data analysis using Quantification Theory 3 to calculate category classifications and sample scores (Excel Quantification Theory Ver. 3.0, Esumi), on which the cluster analysis using Ward's method was then performed (Excel Multivariate Analysis Ver. 6.0, Esumi).

3.5.3 Results

Procedure of Quantification Theory 3

Quantification Theory 3 was used to explore relationships among categories of community pharmacists and among those of hospital pharmacists. It was applied through the following process (for ease of understanding, the word “dimension” has been used instead of the term Quantification Theory 3 actually uses, which is “axis”):

- 1) Numerical values were assigned to samples and categories.
- 2) The Pearson correlation coefficients between samples and categories were calculated to maximize themselves on ten dimensions.
- 3) Close numbers in each category score express “similar” or “resembling,” a strong mutual relationship, measured as a short Euclidean distance. Conversely, large Euclidean distances indicate “different” or “disagreeing,” a weak mutual relationship. This distance is relative, not absolute.

Quantification Theory 3 methods and clustering are interpreted subjectively to explore the similarities among samples based on the analyst’s intention or objective.^{56,57} Thus, the number of dimensions in Quantification Theory 3 and the number of groups in clustering vary depending on the analyst’s decisions, and the interpretation of analysis results can of course also vary depending on the analyst.

Correlation coefficient and category score by Quantification Theory 3

For community pharmacists, the correlation coefficients for dimensions 1–10 using Quantification Theory 3 analysis were from $r=0.5530$ to $r=0.3832$ (Tables 22-1, 22-2); for hospital pharmacists, from $r=0.5862$ to $r=0.3995$ (Tables 23-1, 23-2). A category of listed organization was excluded from the analysis of hospital pharmacists because there was no sample. Correlation coefficients from 0.3 to 0.5 could be interpreted as

weak⁵⁸ and those from 0.4 to 0.7 as fair.⁵⁹ The results for dimensions 1–6 were adapted for community and hospital pharmacists using obtained values greater than 0.4 as a threshold.

Table 22. Correlation coefficient and category scores of community pharmacists

Table 22-1. Community pharmacist with regular employment: correlation coefficient

Correlation coefficient				
Axis	Eigenvalue	Contribution	Cumulative contribution	Correlation coefficient
1	0.3058	5.7%	5.7%	0.5530
2	0.2222	4.1%	9.8%	0.4714
3	0.2000	3.7%	13.5%	0.4472
4	0.1725	3.2%	16.8%	0.4153
5	0.1684	3.1%	19.9%	0.4103
6	0.1643	3.1%	22.9%	0.4053
7	0.1588	3.0%	25.9%	0.3985
8	0.1537	2.9%	28.8%	0.3920
9	0.1512	2.8%	31.6%	0.3888
10	0.1469	2.7%	34.3%	0.3832

Table 22-2. Community pharmacist with regular employment: category score

Category score										
Category	Dim. 1	Dim. 2	Dim. 3	Dim. 4	Dim. 5	Dim. 6	Dim. 7	Dim. 8	Dim. 9	Dim. 10
Single male	-0.6272	1.4212	0.3629	1.3093	-0.6999	-0.7192	1.2324	0.4893	0.1061	-0.5335
Married male	2.1987	1.0757	0.3680	0.4138	1.8512	-0.1080	-1.1092	0.2110	-0.6730	0.5973
Single female	-0.9174	-0.6103	-0.2786	-0.4373	0.1475	-0.1084	-0.8749	-0.3782	0.1612	0.5002
Married female	1.9063	-1.5360	-0.0552	-1.2051	-1.4210	1.7872	2.2617	0.2622	0.0011	-1.5530
22-25 years old	-1.7087	0.0329	-1.8146	0.0832	-0.0151	0.2744	0.0632	-0.0277	-0.4090	0.1718
26-29 years old	-0.5288	-0.0158	1.9708	0.4093	-0.7596	0.1445	0.2112	0.1386	0.5159	-0.2000
30-34 years old	1.0792	0.2533	0.7803	-1.2088	2.5890	-0.3265	0.0604	-0.0644	0.4159	-0.6031
35-39 years old	1.9164	0.2101	-1.1544	-0.1961	0.1309	-1.6308	-1.9072	0.1058	-3.7528	1.4453
40 - years old	2.9026	-0.7120	-1.7265	1.0014	-2.7527	0.7049	0.5516	-0.3206	1.7019	0.1830
- 1 year (Year)	-1.2586	0.5399	-2.0029	-0.5345	0.6385	-0.2993	0.4162	-0.6061	0.7538	0.2962
2-3 years (Year)	-0.7511	-0.4751	-0.4801	0.3493	-0.2617	0.7162	0.3528	1.0796	-1.1836	-0.0806
4-5 years (Year)	-0.0593	0.0320	2.5263	0.9299	-1.4880	0.6490	-0.5096	-0.0415	1.4574	0.9840
6-9 years (Year)	1.0840	0.1666	1.6558	-1.2069	1.3512	-0.5732	0.2800	-0.4534	-0.3007	-1.0646
10 - years (Year)	3.0734	-0.3279	-2.6105	1.7335	-1.6073	-1.3747	-2.1038	-0.7721	0.0197	0.4934
Well-known large company (Reason)	-0.3906	0.0015	0.6769	0.9538	0.2863	0.2371	-0.0344	-0.0121	0.1256	-0.9770
Policy and mission (Reason)	0.4082	2.3321	0.5117	-1.2194	-1.8044	0.4870	0.2623	0.5085	0.9995	2.4354
Listed organization (Reason)	-0.8495	1.1878	-3.1262	2.3166	3.9505	-1.5187	7.6342	-0.3531	1.8997	1.0955
Salary (Reason)	2.7719	-0.5245	-1.8918	5.6175	4.1458	4.7581	-4.1029	1.8563	-2.4016	2.7629
Employment terms (Reason)	0.4745	-0.6194	-1.4100	-2.9815	0.4671	0.2433	-1.4883	1.8235	2.1804	-1.7285
Personal development (Reason)	-0.4570	0.5595	0.8174	0.0858	-0.1136	-0.2409	-0.2668	-2.0404	-1.8863	1.5900
Training system (Reason)	-1.0473	-0.1090	-0.4782	-0.7641	0.5188	0.0919	0.3307	-0.4498	-0.3106	0.3017
Convenient commute (Reason)	1.3250	-2.1929	-1.1261	-0.9247	-1.8253	2.2356	1.0383	-1.1500	-0.9302	1.5336
Recommendation from others (Reason)	1.9227	0.8095	-1.2602	1.5252	-2.5292	-4.6158	-1.9304	-1.6190	0.9345	-1.2923
Others (Reason)	1.0385	-1.3120	1.0922	-1.1472	0.2369	-4.2989	1.0698	2.7432	-3.0503	1.7373
80-100 points (Satisfaction)	0.4217	2.4660	-1.1562	-0.5734	0.7700	0.1395	1.0550	-0.7284	0.3584	0.6444
70-79 points (Satisfaction)	-0.1536	0.5965	0.1696	-0.4650	-0.7160	0.0781	-0.1836	0.5163	-0.0644	-0.3224
60-69 points (Satisfaction)	-0.0499	-0.9902	0.1993	0.7973	0.2409	0.1247	-1.2407	-0.4589	0.1146	-0.6312
50-59 points (Satisfaction)	0.0810	-2.3771	0.3134	-0.3569	0.8534	1.2652	1.0897	-0.4286	-0.9118	1.6649
< 50 points (Satisfaction)	0.3049	-2.6656	0.1842	2.1332	1.2059	-5.2039	4.6574	1.4017	0.6813	1.8724
Salary (Dissatisfaction)	-0.3453	0.2079	-0.0387	-0.6304	-0.2828	1.1028	-0.3950	1.3222	0.4321	0.9007
Employment terms (Dissatisfaction)	0.1198	-0.3249	0.3914	0.5602	-0.0188	-0.1803	0.0980	-1.9234	-0.9452	-0.7133
Lack of personal development (Dissatisfaction)	0.1256	-1.8888	1.1799	1.2048	0.2573	-4.9001	0.6559	2.8259	0.0111	2.9712
Evaluation by supervisor (Dissatisfaction)	1.7784	-1.3256	-1.3243	6.1151	1.7505	1.7063	-0.8726	6.9729	-2.8489	-2.4190
Training system (Dissatisfaction)	-0.5804	0.3963	0.1661	-4.4299	1.7842	-3.1552	-6.5788	-0.8516	5.0872	-4.2982
Interpersonal relationships (Dissatisfaction)	0.1509	-1.5165	-0.8760	-1.4026	-0.7376	-4.9437	1.6627	3.6995	-0.1224	-0.7807
Workplace circumstances (Dissatisfaction)	-0.8726	2.1703	-1.5246	0.0771	0.2818	0.0403	0.3166	-0.8229	-0.7353	-1.5985
Hard work (Dissatisfaction)	-0.0409	-0.3068	0.2123	0.9474	0.1304	0.4258	0.3707	-0.6030	0.9215	-0.1684
Work content issues (Dissatisfaction)	0.7603	1.0928	-0.2678	-0.8733	-1.1738	0.3569	0.1111	2.1651	-2.3520	-0.2435
Others (Dissatisfaction)	0.6910	0.1410	-0.3217	-1.4219	1.4786	-0.3404	0.1830	0.1161	3.4988	2.5066
Salary (Important)	0.5917	-0.1120	0.0286	3.5972	3.3672	1.8877	-0.6732	3.6961	1.9385	1.0315
Work content (Important)	-0.0958	0.3392	0.2605	-0.2055	-0.6245	-0.8078	-0.3915	-0.0660	0.2158	0.0833
Employment stability (Important)	-0.4527	2.3229	0.1469	1.3056	0.6743	0.4850	0.6803	-1.8541	-1.5699	0.7757
Work schedule (Important)	-0.2982	-2.2533	-0.8525	1.1173	1.7894	0.0571	0.2052	-3.9818	1.7588	-1.0807
Work and family life balance (Important)	1.9664	-0.7023	-0.3546	-1.4349	0.4053	1.4752	2.1095	-0.1013	-0.9905	-1.1383
Workplace circumstances (Important)	-0.9678	-0.2472	-2.0442	-0.5773	0.7343	-0.0765	-4.0208	2.9153	0.2639	-4.6684
Interpersonal relationships (Important)	-0.7123	-0.2748	0.0232	-0.4231	-0.7684	-0.2063	-0.3925	0.4353	-0.3837	0.1486
Others (Important)	0.5202	-0.6410	0.9832	-0.0222	1.7100	0.5869	2.9310	-1.7720	5.3569	8.9558
Stay until retirement (Future)	2.3868	1.6643	-1.6824	1.7991	-0.7846	-0.4037	0.6900	-0.1154	2.7006	-1.3288
Stay for more than five years (Future)	0.1847	1.8494	0.3231	-0.3874	-0.0193	0.5157	0.0584	0.1601	-0.7217	0.0189
Stay for less than five years (Future)	-0.9652	-1.0781	-0.2679	0.5797	0.1175	-0.2575	0.4286	0.4600	-0.0265	-1.3150
Undecided (Future)	0.0942	-1.2202	0.2742	-0.4907	0.0916	-0.1889	-0.5487	-0.4967	0.1187	1.3288

Dim, Dimension; Year: Years employed in the current workplace; Reason, Reasons for choosing current workplace; Satisfaction, Level of job satisfaction; Dissatisfaction, Reasons for dissatisfaction; Year; Important, Most important work-related concerns; Future, Future work plans.

Table 23. Correlation coefficient and category scores of hospital pharmacists

Table 23-1. Hospital pharmacists with regular employment: correlation coefficient

Correlation coefficient				
Dimension	Eigenvalue	Contribution	Cumulative contribution	Correlation coefficient
1	0.3436	6.5%	6.5%	0.5862
2	0.2774	5.3%	11.8%	0.5267
3	0.2260	4.3%	16.1%	0.4754
4	0.1976	3.8%	19.9%	0.4445
5	0.1923	3.7%	23.6%	0.4386
6	0.1858	3.5%	27.1%	0.4310
7	0.1801	3.4%	30.5%	0.4244
8	0.1662	3.2%	33.7%	0.4076
9	0.1626	3.1%	36.8%	0.4032
10	0.1596	3.0%	39.8%	0.3995

Table 23-2. Hospital pharmacists with regular employment: category score

Category score										
Category	Dim. 1	Dim. 2	Dim. 3	Dim. 4	Dim. 5	Dim. 6	Dim. 7	Dim. 8	Dim. 9	Dim. 10
Single male	-0.4098	1.2133	1.0162	0.1099	0.0195	-0.1244	-0.9299	-0.1963	0.7187	-0.0402
Married male	2.2941	-0.3568	-0.9770	0.3467	1.0210	-1.2659	-0.8884	0.3398	-0.2588	-0.2216
Single female	-1.0139	-0.4098	-0.3234	-0.3367	0.0058	-0.0216	0.4010	-0.0693	-0.0618	-0.0679
Married female	1.8227	0.0168	1.2638	0.8488	-2.1197	2.9444	1.8454	0.1599	-0.8650	0.9031
22-25 years old	-1.4632	1.1423	-0.4440	-0.3028	-0.7238	-1.0604	-0.0051	0.5834	0.0175	-0.2458
26-29 years old	-0.7218	-1.0798	0.6012	-0.0925	1.2221	1.6308	0.0697	-0.3524	-0.1166	0.8344
30-34 years old	1.0820	-0.7282	1.6134	1.9023	-1.1970	-0.8242	-0.3321	-0.6949	-0.5513	-1.1004
35-39 years old	1.9749	-0.1501	-2.2597	1.1689	1.0707	-1.6560	-0.4619	1.7538	0.5980	1.3888
40 - years old	2.7504	0.9218	-0.6127	-2.7973	-0.5625	1.3304	0.7534	-1.3564	0.5168	-1.3126
- 1 year (Year)	-0.6859	3.1040	1.5308	1.2312	1.3254	-0.3169	1.2676	-0.6120	0.5113	1.1755
2-3 years (Year)	-1.2855	0.3929	-0.9049	-0.3897	-1.0577	-0.6612	-0.6187	0.0330	-0.3117	0.0758
4-5 years (Year)	-0.5215	-1.1379	1.3355	-1.1850	1.0242	1.5654	0.6843	0.4330	0.0279	-0.3006
6-9 years (Year)	0.6688	-1.7423	0.7512	2.2300	-0.0432	-0.2164	-0.4197	-0.3885	-0.1655	0.4916
10 - years (Year)	2.5491	0.4144	-1.3102	-0.7852	0.1154	-0.0992	0.0744	0.1766	0.3928	-0.9011
Well-known large company (Reason)	-0.6118	-0.1310	-0.5864	-0.5949	0.3246	0.0699	-0.2975	2.1440	-0.4792	0.0631
Policy and mission (Reason)	0.0439	0.9068	0.7744	-0.5016	-0.5511	-0.2326	-0.1438	-0.8464	0.9481	-2.4441
Salary (Reason)	2.4256	1.8927	-3.5531	-6.2062	-0.3018	0.9509	-9.7162	-5.3253	-2.5355	7.3906
Employment terms (Reason)	0.9048	1.8006	-0.3656	-0.8347	1.4066	2.0203	1.3972	0.1508	-1.5361	0.3905
Personal development (Reason)	-0.4640	0.3145	-0.2069	1.5017	0.3657	0.3772	-1.0859	-0.3005	0.8385	-0.8069
Training system (Reason)	-0.8604	2.5081	0.9257	2.7636	-2.6305	2.1134	0.8259	4.1287	9.6610	11.3803
Convenient commute (Reason)	0.0982	-0.5625	-1.0533	0.3037	0.1526	-0.2367	1.7593	-0.1150	-2.0538	0.3912
Recommendation from others (Reason)	0.9098	-0.9758	0.1875	-0.9172	1.5783	-1.2160	0.3339	-2.5630	1.0102	2.0644
Others (Reason)	0.5997	-0.9896	2.4956	-0.2891	-2.6045	-0.0672	-0.0078	0.4197	0.2947	0.7859
80-100 points (Satisfaction)	0.0487	2.3588	1.5114	0.1545	0.4941	-0.0101	0.7857	0.9306	-0.6942	-0.3217
70-79 points (Satisfaction)	0.0290	0.4792	-0.4681	0.2735	0.0988	0.4309	-1.2325	-0.0037	-0.2673	0.4152
60-69 points (Satisfaction)	-0.1546	-0.7113	-1.0161	0.3825	-0.1964	0.1608	0.8931	-1.0214	0.7738	-0.0790
50-59 points (Satisfaction)	-0.2294	-1.3685	0.5980	-1.4462	-1.3275	0.0626	0.6388	1.9790	-0.0676	-0.9927
< 50 points (Satisfaction)	1.0544	-2.1654	3.1003	-0.9147	2.1570	-3.6308	-0.8255	-1.2978	-0.6122	0.9659
Salary (Dissatisfaction)	0.5550	-0.2341	-0.3420	0.5380	0.7576	0.3977	-1.3798	1.5629	-0.2765	-0.7207
Employment terms (Dissatisfaction)	-0.3286	-0.4369	-1.2608	0.2964	-0.8773	-0.4567	1.2192	-0.8073	-0.0098	-0.5773
Lack of personal development (Dissatisfaction)	-0.5670	-0.9330	0.7774	0.4793	0.5462	2.1355	-0.7402	-2.1850	0.2365	-1.9936
Evaluation by supervisor (Dissatisfaction)	0.7611	0.1537	1.6780	1.0678	-4.7507	2.4945	0.9087	3.2986	9.3032	4.5863
Training system (Dissatisfaction)	-0.7567	-0.4159	1.2328	-0.3995	-1.8567	-1.3069	0.5617	2.1507	-1.7589	-0.2932
Interpersonal relationships (Dissatisfaction)	-0.7831	-1.8435	1.0349	-2.6292	2.0099	0.1558	-0.8223	1.6740	0.4233	0.1252
Workplace circumstances (Dissatisfaction)	-0.5944	1.7700	0.1122	0.9217	3.3607	1.2647	1.4266	0.1333	0.5937	1.0796
Hard work (Dissatisfaction)	0.0248	-0.2992	-0.5615	-0.3262	-0.6831	0.0603	-0.7166	-1.7072	1.2371	0.6046
Work content issues (Dissatisfaction)	-0.0575	1.7729	1.5678	0.9034	-1.3585	1.2726	-1.2492	-1.2377	-3.9704	0.2114
Others (Dissatisfaction)	1.1913	1.5827	2.1786	-1.5084	0.8663	-2.3725	1.7792	-0.5952	-0.3442	1.1623
Salary (Important)	0.1219	-2.4762	1.5941	-2.0406	3.5335	0.6026	-2.3621	4.3411	-0.9709	-0.3183
Work content (Important)	-0.0411	0.2298	0.2387	0.1941	0.1881	0.2174	-0.6713	-0.0117	1.3917	-1.1282
Employment stability (Important)	0.7095	1.6116	-0.8157	-2.9976	-2.2419	-1.8533	-0.1667	1.9022	-0.5635	3.0698
Work schedule (Important)	-0.8327	-1.3648	-2.0919	0.4445	-0.5637	2.1285	1.3243	-0.9175	-1.7324	-2.0869
Work and family life balance (Important)	1.3813	-0.6544	-0.2875	1.6516	-1.2672	0.5459	0.9300	0.9046	-1.1461	1.6562
Workplace circumstances (Important)	-1.4653	3.1859	-0.0328	-0.1014	0.7191	2.8940	-5.7286	-3.8495	-5.5152	4.3954
Interpersonal relationships (Important)	-0.7556	0.1428	-0.4097	-0.5132	0.7418	-0.5867	1.4571	-1.0013	-0.5910	0.3113
Others (Important)	-0.2356	-1.5778	5.8809	0.0526	-2.8518	-4.4997	-4.1715	-2.8262	-2.3740	-0.3957
Stay until retirement (Future)	2.8812	1.6194	1.3147	-3.5651	-1.2187	2.5619	0.0148	-0.3642	-0.1702	-0.5023
Stay for more than five years (Future)	0.3242	1.3089	-0.1828	1.3624	0.4599	0.4019	0.0550	0.4935	-0.6674	-0.6243
Stay for less than five years (Future)	-0.6744	-0.8658	-0.4620	-0.3968	-0.6191	0.5182	-0.8380	-0.3859	-0.0013	0.4920
Undecided (Future)	0.0123	-0.3756	0.4671	-0.0620	0.5521	-1.3995	0.9360	0.0995	0.5969	0.0388

Dim, Dimension; Year: Years employed in the current workplace; Reason, Reasons for choosing current workplace; Satisfaction, Level of job satisfaction; Dissatisfaction, Reasons for dissatisfaction; Year; Important, Most important work-related concerns; Future, Future work plans.

Interpretation of dimensions of category scores

Interpretations of dimensions 1 and 2 can be described based on the category scores (Tables 22-1, 22-2, 23-1, 23-2) as follows. (Dimensions 3 to 6 were not interpreted because the category scores of each dimension were used as parts for the clustering procedure.)

Dimension 1 was defined as the age-related indicator. For community pharmacists, larger category scores in dimension 1 indicated years employed in the current workplace (over 10 years, category score (cs)=3.0734); age (over 40 years, cs=2.9026); reasons for choosing the current workplace (salary, cs=2.7719); future work plans (remain until retirement, cs=2.3868); gender/marital status (married male, cs=2.1987); and the most important work-related concerns (work and family life balance, cs=1.9664), whereas smaller category scores indicated age (22–25 years, cs=–1.7087); years employed in the current workplace (<1 year, cs=–1.2586); reasons for choosing the current workplace (training system, cs=–1.0473); most important work-related concerns (workplace circumstances, cs=–0.9678); future work plans (remain for less than five years, cs=–0.9652), and gender/marital status (single female, cs=–0.9174).

For hospital pharmacists, higher category scores in dimension 1 expressed future work plans (remain until retirement, cs=2.8812); age (over 40 years, cs=2.7504); years employed in the current workplace (over 10 years, cs=2.5491); reason for choosing the current workplace (salary, cs=2.4256); gender/marital status (married male, cs=2.2941); and age (35–39 years, cs=1.9749), whereas lower category scores expressed the most important work-related concerns (workplace circumstances, cs=–1.4653); age (22–25 years, cs=–1.4632); years employed in the current workplace (2–3 years, cs=–1.2855); gender/marital status (single female, cs=–1.0139); reasons for choosing the current

workplace (training system, $cs=-0.8604$); and the most important work-related concerns (work schedule, $cs=-0.8327$). It thus seems that dimension 1 for both community and hospital pharmacists is related to age.

Dimension 2 was defined as the happiness-related indicator. For community pharmacists, higher category scores in dimension 2 indicated job satisfaction (80–100 points, $cs=2.4660$); reasons for choosing the current workplace (policy and mission, $cs=2.3321$); the most important work-related concerns (employment stability, $cs=2.3229$); dissatisfaction (workplace circumstances, $cs=2.1703$); and future work plans (remain for more than five years, $cs=1.8494$, remain until retirement, $cs=1.6643$), whereas smaller category scores indicated satisfaction (<50 points, $cs=-2.6656$, 50–59 points, $cs=-2.3771$); the most important work-related concerns (work schedule, $cs=-2.2533$); reasons for choosing the current workplace (convenient commute, $cs=-2.1929$); dissatisfaction (lack of personal development, $cs=-1.8888$); and gender/marital status (married female, $cs=-1.5360$).

For hospital pharmacists, higher category scores in dimension 2 expressed the most important work-related concerns (workplace circumstances, $cs=3.1859$); years employed in the current workplace (less than one year, $cs=3.1040$); reasons for choosing the current workplace (training system, $cs=2.5081$); job satisfaction (80–100 points, $cs=2.3588$); reasons for choosing the current workplace (salary, $cs=1.8927$); and reasons for choosing the current workplace (employment terms, $cs=1.8006$), whereas lower category scores expressed the most important work-related concerns (salary, $cs=-2.4762$); job satisfaction (<50 points, $cs=-2.1654$); dissatisfaction (interpersonal relationships, $cs=-1.8435$); years employed at the current workplace (6–9 years, $cs=-1.7423$); the most important work-related concerns (others, $cs=-1.5778$); and job

satisfaction (50–59 points, $cs=-1.3685$). These results imply that dimension 2 for community and hospital pharmacists is related to a feeling of happiness.

Procedure of cluster analysis

The obtained category scores for the six dimensions were applied to each sample to calculate the sample scores, which were then classified using cluster analysis. The sample score is obtained as the sum of the category scores of the samples, divided by the number of corresponding categories, that is, as an average of the category scores of each sample. The cluster analysis was conducted by trial and error, one step at a time. The original samples were divided by gender, marital status, age, and sample size (the smallest sample size became approximately 5% of the original samples). Consequently, samples of community and hospital pharmacists were split into nine clusters each, to easily and comprehensibly explain the features of each cluster, including attributes and work attitude.

Considering all samples as one cluster, the average proportion of each category in each item is calculated. The categories were defined as the features of groups whose proportion exceeded more than approximately 5% when compared with the average proportion of each category—similar to concept of a radar chart. Feature categories found in each cluster are shown in Table 24.

Table 24. Cluster analysis of community pharmacists and hospital pharmacists with regular employment

Community pharmacist (n = 1,228)									
Cluster	1	2	3	4	5	6	7	8	9
n	192	119	114	201	43	141	174	139	105
Gender	Male & female	Male	Male	Male	Male	Female	Female	Female	Female
Marital status	Single	Single	Single	Married	Married	Single	Single & married	Single	Married
Age (years)	22-25	26-29	26-29	30-34	35-	22-25	26-29	35-39	35-
Year (years)	-1	4-5	2-3	6-9	10-	-3	4-9	-	10-
Reasons	LC, ETS	WKL, PM, OPD	WKL, LC,	ETC	RSF	ETS, CC	WKL, ETS	RSF,	ETC, CC
Job satisfaction	70-100	70-79	50-69	80-100	80-100	50-69	50-69	<50	50-69
Dissatisfaction	WPC, SLY	WCI	ETC, ETS	Other	ETC, WCI	SLY, HW	ETC	LPD, IR	-
Important	IR, EMS	WCO, EMS	SLY, WS	WLB	WCO, WLB	WCO, IR	IR	WCO, IR	WLB
Future (years)	5 ↑	5 ↑	5 ↓	5 ↑	URT	5 ↓, UND	UND	5 ↓, UND	URT, UND

Hospital pharmacist (n = 419)									
Cluster	1	2	3	4	5	6	7	8	9
n	32	31	27	44	91	59	33	60	42
Gender	Male	Male	Male	Male	Female	Female	Female	Female	Male & female
Marital status	Single	Single	Married	Married	Single	Single	Single	Married	Married
Age (year)	22-25	26-29	30-34	30-39	22-25	26-29	26-29	30-34	40-
Year (year)	-1	-1, 4-5	4-9	6-	2-3	4-5	2-3, 6-9	6-9	10-
Reasons	PM, ETS	ETC, OPD	RSF, Other	CC	WKL	WKL	CC, WKL	OPD,	PM, Salary,
Job satisfaction	80-100	70-79	-59	60-69	60-69	50-59	60-69	60-69	70-79
Dissatisfaction	WPC, WCO,	SLY, WPC	ETC, IR, Other	SLY	ETC, ETS	IR	ETC	EM	SLY, HW
Important	WPC, IR	WCO	SLY, Other	WLB	IR	SLY, IR	WS	WLB	EMS
Future(year)	5 ↑	5 ↑	UND	5 ↑	5 ↓	5 ↓, UND	5 ↓	5 ↑	URT

* The above categories were selected, the proportion of which exceeded 5 % when compared with the average proportion of each category in each item.

Year, Years employed in the current workplace;

Reason, Reasons for choosing current workplace; CC, Convenient commute; ETC, Employment terms and conditions; ETS, Employee training system; LC, Listed company;

OPD, Opportunity for personal development; PM, Policy & mission; RSF, Recommendation from senior or friend; SLY, Salary; WKL: Well-known large company/hospital.

Dissatisfaction, Reasons for dissatisfaction; EM, Evaluation of myself; ETC, Employment terms and conditions; ETS, Employee training system; HW, Hard work;

IR, Interpersonal relationships; LPD, Lack of personal development; SLY, Salary; WCI, Work content issues; WCO, Work content; WPC, Workplace circumstances.

Important, Most important work-related concerns; EM, Evaluation of myself; EMS, Employment stability; IR, Interpersonal relationships; SLY, Salary;

WCO, Work content; WLB, Work and family life balance; WPC, Workplace circumstances; WS, Work schedule.

Future, Future work plans; URT, Until retirement; 5 ↑, Stay for long term (more than five years) ; 5 ↓, Stay for less than five years; UND, Undecided.

Clusters of community pharmacists

For community pharmacists, it was indicated that two clusters—cluster 4, 30–34-year-old married males and cluster 5, married males aged above 35 years—reported the highest job satisfaction, intending to remain for more than five years or until retirement. In contrast, one cluster—cluster 8, 35–39-year-old single females—reported the lowest job satisfaction and intended to remain for less than five years or were undecided.

Each community pharmacist cluster's principal features are described as follows. Cluster 1 (n=192) indicated single male and female pharmacists in their early 20s, who expected a well-organized education, were discontented with their salary or workplace circumstances, reported 70–100 points on job satisfaction, and intended to remain for more than five years. Features of cluster 2 (n=119) and 3 (n=114) indicated single males in their late 20s. Cluster 2 expressed the importance of personal development, scored 70–79 points in job satisfaction, showed dissatisfaction with work content issues, and intended to remain for more than five years. On the whole, clusters 1 and 2 exhibited employment stability as an important concern. In contrast, cluster 3 expressed concern with salaries and work schedules, 50–69 points in job satisfaction, and the possibility of leaving jobs within the next five. Features of clusters 4 (n=201) and 5 (n=43) indicated married men aged above 30 years of age who expressed 80–100 points in job satisfaction and regarded concerns of work–life balance as an important factor. Cluster 4 indicated subjects in their early 30s who intended to remain for more than five years; in contrast, cluster 5 indicated subjects in their late 30s who intended to remain until retirement. Features of cluster 6 (n=141) showed single females in their early 20s with 50–69 points in job satisfaction, dissatisfaction with salary, and intending to remain for less than five years or undecided. Features of cluster 7 (n=174) designated single and married females

in their late 20s with 50–69 points in job satisfaction, dissatisfaction with employment conditions, and concern regarding interpersonal relationships in the workplace, who did not indicate clear future work plans. Features of cluster 8 (n=139) showed single females in their late 30s expressing concern regarding workplace relationships, less than 50 points in job satisfaction, dissatisfaction with a lack of personal development and interpersonal relationships, and the possibility of leaving within the next five years or unsure. Features of cluster 9 (n=105) indicated married females over 35 years of age stating that their reasons for choosing their current workplace were good working conditions and easy commuting; they designated work–life balance as important to consider, planned to remain until retirement or were undecided, and had 50–69 points in job satisfaction.

Clusters of hospital pharmacists

For hospital pharmacists, it was found that one cluster—cluster 1, 22–25-year-old single males—reported the highest job satisfaction, intending to remain for more than five years. However, another cluster—cluster 3, 30–34-year-old married males—reported the lowest job satisfaction and highest undecidedness about period of working at workplace.

The major features of hospital pharmacist clusters are described as follows. Features of cluster 1 (n=32) indicated unmarried males in their early 20s who reported 80–100 points in job satisfaction, expectation of training and compatible workplace policies, and plans to remain for more than five years, but also dissatisfaction with workplace circumstances. Features of cluster 2 (n=31) indicated a mix of new and mid-career single males in their late 20s, reporting 70–79 points in job satisfaction, who indicated an expectation of personal development, dissatisfaction with salary and workplace circumstances, and intention to remain for more than five years. Features of

cluster 3 (n=27) indicated married males in their early 30s who reported <59 points in job satisfaction, expressed dissatisfaction with employment education and human relationships at in workplace, and salary concerns; they did not indicate clear future work plans. Features of cluster 4 (n=44) showed married men in their 30s who reported 60–69 points in job satisfaction, were dissatisfied with salary, and considered work–life balance an important factor; they intended to remain for more than five years. Features of cluster 5 (n=91) indicated single females in their early 20s who reported 60–69 points in job satisfaction, were dissatisfied with employment conditions and education, and considered interpersonal relationships an important factor. Features of cluster 6 (n=59) indicated single females in their late 20s who showed 50–59 points in job satisfaction and revealed dissatisfaction with human relationships in the workplace. Features of cluster 7 (n=33) indicated a mix of new and skilled single female pharmacists with 60–69 points in job satisfaction. They gave convenient commuting as their reason for choosing the current workplace and considered their work schedule important. Clusters 5, 6, and 7 all indicated the possibility of leaving within five years.

Features of cluster 8 (n=60) showed married females in their early 30s who had 60–69 points in job satisfaction and considered concern for work–life balance to be important; their reasons for choosing the current workplace included personal development and dissatisfaction with management’s evaluation of them. Features of cluster 9 (n=42) designated married males and females over 40 years old who had 70–79 points in job satisfaction, were concerned over their employment stability, and considered their salary unsatisfactory. Clusters 8 and 9 planned to remain for at least five years or until retirement.

Comparison among clusters

Clusters of “single male and female community pharmacists in their early twenties, less than 1 year employed, with higher satisfaction” (cluster 1 of the community pharmacists), “single male hospital pharmacists in their early twenties, less than 1 year employed, with higher satisfaction” (cluster 1 of the hospital pharmacists), and “married male community pharmacists in their thirties, with more work experience and higher satisfaction” (cluster 4 of the community pharmacists) tended to indicate long-term work commitment. “Married male hospital pharmacists in their thirties” separated into two clusters based on long-term work commitment, cluster 4 of the hospital pharmacists, versus thinking of leaving workplace in near future, cluster 3 of them. This result reflects an unstable professional situation or attitude and possible stress based on it in married male hospital pharmacists in their thirties.

Clusters including “less than five years” category

All extracted clusters here scored less than 70 points of satisfaction (Table 25). Among community pharmacists, the clusters of “single females in their early twenties and single males in their late twenties, who had mastered routine work and been employed around 3 years employed” and “females in their late twenties, mid-career pharmacists, and single females in their late thirties” were extracted.

Among hospital pharmacists, the clusters of “single females in their twenties, beginner and mid-career pharmacists” and “married males in their early thirties, mid-career pharmacists” were extracted.

Administrators of community pharmacies and hospital pharmacies should take care managing pharmacists in these clusters in order to retain them and improve their development and satisfaction.

Table 25. Cluster of future plans less than 5 years of community/hospital pharmacists with regular employment

Cluster	Community pharmacist (n = 568)				Hospital pharmacist (n = 210)			
	6	3	7	8	5	6	7	3
n	141	114	174	139	91	59	33	27
Gender	Female	Male	Female	Female	Female	Female	Female	Male
Marital status	Single	Single	Single & married	Single	Single	Single	Single	Married
Age (years)	22-25	26-29	26-29	35-39	22-25	26-29	26-29	30-34
Year (years)	-3	2-3	4-9	-	2-3	4-5	2-3, 6-9	4-9
Reasons	ETS, CC	WKL, LC, SLY	WKL, ETS	RSF, Other	WKL	WKL	CC, WKL	RSF, Other
Job satisfaction	50-69	50-69	50-69	<50	60-69	50-59	60-69	-59
Dissatisfaction	SLY, HW	ETC, ETS	ETC	LPD, IR	ETC, ETS	IR	ETC	ETS, IR, Other
Important	WCO, IR	SLY, WS	IR	WCO, IR	IR	SLY, IR	WS	SLY, Other
Future (years)	5 ↓, UND	5 ↓	UND	5 ↓, UND	5 ↓	5 ↓, UND	5 ↓	UND

* The above categories were selected, the proportion of which exceeded 5 % when compared with the average proportion of each category in each item.

Year, Years employed in the current workplace.

Reason, Reasons for choosing current workplace; CC, Convenient commute; ETC, Employment terms and conditions; ETS, Employee training system; LC, Listed company; OPD, Opportunity for personal development; PM, Policy & mission; RSF, Recommendation from senior or friend; SLY, Salary; WKL: Well-known large company/hospital.

Dissatisfaction, Reasons for dissatisfaction; EM, Evaluation of myself; ETC, Employment terms and conditions; ETS, Employee training system; HW, Hard work; IR, Interpersonal relationships; LPD, Lack of personal development; SLY, Salary; WCI, Work content issues; WCO, Work content; WPC, Workplace circumstances.

Important, Most important work-related concerns; EM, Evaluation of myself; EMS, Employment stability; IR, Interpersonal relationships; SLY, Salary; WCO, Work content; WLB, Work and family life balance; WPC, Workplace circumstances; WS, Work schedule.

Future, Future work plans; URT, Until retirement; 5 ↑, Stay for long term (more than five years) ; 5 ↓, Stay for less than five years; UND, Undecided.

3.5.4 Discussion

Retention of pharmacists is very important for pharmacy management. In this study, on the whole, pharmacists with low levels of satisfaction intended to leave their jobs within the next five years, a tendency also described in international studies.^{51,52} In this study, four demographic clusters of community pharmacists emerged with job satisfaction less than 70 points and future work plans to remain for less than five years or unclear plans: cluster 3 (26–29-year-old single males), 6 (22–25-year-old single females), 7 (26–29-year-old single/married females), and 8 (35–39-year-old single females). There were also four such clusters among hospital pharmacists: cluster 3 (30–34-year-old married males), 5 (22–25-year-old single females), 6 (26–29-year-old single females), and 7 (26–39-year-old single females).

The four clusters of community pharmacists describe to intend to work at their current place less than 5 years or were undecided. Focusing on dissatisfaction category, cluster 8 indicates a lack of personal development and interpersonal relationships, that is, internal factors. Clusters 3, 6, and 7 indicate salary, employment terms and conditions, and employee training systems, respectively, which are external factors. Similarly, it seems that pharmacists in cluster 8 might experience more job satisfaction or change their future work plans to remain longer-term in response to career development opportunities with and good relationships among colleagues.

The four clusters of hospital pharmacists expect to work at their current place less than 5 years or uncertain term. Cluster 3 and 6 indicate dissatisfaction with interpersonal relationships, an internal factor. The very stressful daily practice at hospital pharmacies might contribute to this. Conversely, clusters 3, 5 and 7 indicate employment terms and conditions or the employee training system, which are external factors—the same ones

mentioned by community pharmacists (except salary). Forming good human relationships with pharmacy colleague might not only improve job satisfaction and foster long-term future work commitment but also positively influence the medical teams that pharmacists work with.

Some studies outside Japan seem to support this study with regard to job satisfaction and future work plans. Increasing the degree of job satisfaction appears to decrease the incidence of seeking alternative employment.⁵⁰ One reasons for remaining in a job is good human relationships with and among coworkers.⁴⁰ Family-friendly flexible work hours might be more effective in retaining a steady workforce than increasing salaries.⁵³ Increasing pharmacists' motivation affects their job satisfaction and intention to leave or not leave the workplace.⁵¹ However, it has also been found that it is characteristic for pharmacists to be inclined to change workplaces because of stress or a desire for change.⁴⁰

It has been confirmed that pharmacists' attitudes toward work vary depending on their age, marital status, and work experience.^{8,33} Clustering work attitudes among pharmacists has also been done in a few studies outside Japan. Practicing pharmacists have been classified into five groups based on the relationship between job satisfaction and turnover: the "unsatisfied group" was 20 times more likely than the "satisfied group" to leave current employment within one year.⁶⁰ Motivation factors of young pharmacists in Ukraine were divided into two clusters, which were motivation to operate a privately owned pharmacy and improve their living condition.⁶¹ The level of occupational satisfaction among pharmacists with a PharmD degree was lower than that among pharmacists with a bachelor's degree.⁶² The present clustering study of work attitudes among pharmacists seems to be the first in a Japanese context, standing alongside these

international studies.

The vast majority of pharmacists no doubt engage in their daily practice calmly and sincerely, focusing on good patient care as medical professionals. However, each one also works with specific expectations, concerns, and levels of satisfaction or dissatisfaction, depending on factors like age, marital status, and experience. To provide good medical service to patients, pharmacists need to be satisfied with their job.⁷ It is expected then, that smooth daily operation and patient care will rely on staff pharmacists, supervising pharmacists, and pharmacy or hospital management working together to ensure an atmosphere of positivity and mutual support in their workplaces.

Limitations

These samples do not represent Japanese community and hospital pharmacies in their entirety. In addition, Quantification Theory 3 and cluster analysis are very useful methods of exploratory analysis for grasping a group's features; however, the classification of clusters and interpretation of their features are affected by the analyst's biases and are not absolute or objective.

According to Hayashi, "Quantification does not mean finding numerical values but giving them patterns on the operational point of view in a proper sense. In this sense, quantification has no absolute meaning but relative meaning to our purpose. For example, *kan* (the efficient subjective judgement of experts) will be able to be analyzed and treated quantitatively and therefore to become a common property to us."⁵⁶

3.5.5 Conclusions

This study used clustering to examine how pharmacists of different ages, marital statuses, and levels of work experience felt about their work. The relationship between job satisfaction and future work plans was clarified, and the relationship between

workplace conditions, including human relationships, and future work plans was discussed.

It was demonstrated in this chapter that future work plans are related to age, years employed, and job satisfaction. As the result of cluster analysis, all clusters planning to work in their current job for less than five years showed relatively poor job satisfaction at less than 70 points. It seems that increasing job satisfaction may be more effective than raising salary to keep a stable pharmacy workforce and prevent them from quitting. However, individual managers will have to consider the characteristics of their own pharmacy employees and workplaces.

4. Overall conclusion

As mentioned above, the basic intention of this dissertation was to gain an overview of Japanese pharmacy students and pharmacists' work attitudes, with the ultimate goal of fostering their retention. Based on the findings, the study presents three key terms of relevance to this topic: *professional and personal development*, *community and hospital pharmacy training*, and *job satisfaction*.

Professional and personal development was not only the most important consideration for pharmacy students choosing a career path but also a top goal for working pharmacists in their professional life. Thus, opportunities for career-oriented education and continuous education will be important, as in all healthcare professions.

Community pharmacy training or *hospital pharmacy training* affected career choice, as pharmacy students in these courses tended to move into these fields. This implies that pharmacy students can be encouraged to move into different areas of pharmacy work by providing related education, as curriculum influences career choice.

Finally, approximately 96.0% of community pharmacists and 93.9% of hospital pharmacists in regular employment indicated *job satisfaction* of more than 50 out of 100 points, the former a little higher than the latter. Salary was the top reason for dissatisfaction among regular employees and among all respondents, although it was not a high career priority as it is for pharmacists outside Japan. This is a positive, distinguished characteristic of Japanese pharmacists' dedication to their work. This study indicated higher satisfaction among Japanese pharmacists than international studies have shown among pharmacists in other countries. removed.

However, there are not so many pharmacists intending a long-term commitment. Future work plan responses revealed that only 40% of community pharmacists and 30%

of hospital pharmacists mentioned that they wanted to stay in their current job for more than five years or until retirement. This suggests that the shift to high turnover and labor mobility, similar to Western pharmacists, may continue. Outside Japan, there are many studies on pharmacy retention, a critical issue in pharmacy management. Pharmacists tend to change workplace readily due to stress, and a report says that the mean term staying in the same pharmacy is approximately five years for male and two years for female pharmacists.³² Drucker has pointed out that mobility and lack of sense of belonging to an organization are a general tendency of professionals in the society of the future.⁶³

In the cluster analysis, age, years employed, and job satisfaction were found to relate strongly to future work plans. According to reports from other countries, human relations and atmosphere of the workplace offer stronger reasons than salary for staying at the current workplace or leaving for a new job. In addition, working closely with patients and helping them with pharmacotherapy in clinical practice were preferable to dispensing or treating medicine for most pharmacists, and its recognitions by managers were described as factors to increase job satisfaction, along with continuous education.

The broad significance of this study is as follows. First, the latest information it provides on Japanese pharmacists' work attitudes can be applied to pharmacy student education, as indicated above. Second, information regarding work attitudes can be used by pharmacy managers to improve their employees' practices, satisfaction, and retention. Finally, these research results, which have been published in English journal to the international readers, providing the first source of findings on pharmacists' work attitudes in Japan.

Based on the results of this study, the following three proposals are made. First,

Japanese pharmacists' work attitudes should be surveyed by third parties regularly. In contrast to the "Physician, Dentist and Pharmacist Survey" conducted every two years by the Ministry of Health, Labour and Welfare, which focuses only on gathering numbers of people in each occupation, the proposed "Pharmacists' Work Attitudes" survey, on the model of the "National Pharmacist Workforce Survey," carried out in the United States approximately every five years, can provide deep information on pharmacists' working conditions and opinions. Discussions or proposals based on its results are reported in the *Journal of the American Pharmacists Association* regularly, providing common ground for academia and healthcare practitioners. As community and hospital pharmacy practices are affected by national government which regulates all health care fees every two years in Japan, independent work attitudes survey and proposals based on this results to government, health care professional society, academia, or even general society are expected by third party which distinguish from profitable relative organizations.

Second, offering a variety of career-related curricula to students is to help them make the decision to work in pharmaceutical marketing, production, clinical research, or public health. The knowledge, abilities, and skill of pharmacists are important to the broad healthcare sector and to society in many ways, but pharmacists considering areas other than clinical settings need more education/training and curriculum support to achieve their career preference.

Third, a standardized pharmacy resident program, a form of early clinical training in community pharmacy and hospital pharmacy, is required for all motivated pharmacists to support their professional development. Distinct from the training of pharmacy students, a residency as a licensed pharmacist is a serious job in which professional responsibilities must be fulfilled and ethics adhered to. A high-quality standardized

residency program might motivate all pharmacy beginners, across settings, and lead to greater professional and personal development and better service for the public.

The evolution of clinical pharmacy as a field⁶³ can be seen in terms of the history of pharmacists' career development and the evolution of job satisfaction among community pharmacists and hospital pharmacists.⁶⁴ It is hoped that the results of this study of work attitudes will help pharmacy students make better-informed career decisions, and that this study will stimulate further research regarding work attitudes of pharmacy students and pharmacists.

In conclusion, just as it was explored here how community pharmacy training and hospital pharmacy training affect students' career decision, it should be recognized and remembered that all attitudes, words, and behaviors of every educator, pharmacist, and pharmacy worker strongly affect the future career choice of the student.

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