

Postgraduate Plans of Undergraduate Pharmacy Students in Thailand

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INTRODUCTION

Based on the 1988-89 full-time foreign pharmacy graduate enrollment reported by the American Association of Colleges of Pharmacy (AACP), 40 Thai pharmacy graduate students attended pharmacy graduate schools in the United States (1). This number represented the fifth highest foreign pharmacy graduate enrollment among the 138 countries reported. In addition, AACP enrollment reports showed that the total number of foreign pharmacy graduate students enrolled in American pharmacy schools has increased from 826 in 1986-87 to 995 in 1987-88 and to 1,069 in 1988-89 (1-3). Although this trend shows an increasing number of foreign pharmacy graduate students coming to the U.S., little is known about these students' postgraduate plans. In a survey of 249 foreign pharmacy graduate students attending 56 American pharmacy schools, it was found that most foreign students were pursuing an advanced degree in basic sciences and that they were interested in academe as a career (4). In the U.S., postgraduate plans of undergraduate American pharmacy students have been examined in several stud-

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ies; however, no international study has been reported (5-9). With the number of these foreign pharmacy graduate students in the U.S. growing, it is interesting to assess Thai pharmacy students' plans upon graduation. Where do they plan to practice? What proportion is interested in pursuing a graduate degree? How many of them plan to study in the U.S.?

BACKGROUND

Currently, the pharmacy curriculum in Thailand is a five-year program, which includes a two-year prepharmacy program in the school of natural sciences. There are six colleges of pharmacy in Thailand, all funded by the government. Three are located in Bangkok, the capital city, and the others are in the northern, the southern, and the northeastern parts of the country. The education system in Thailand operates on a two-semester per year basis. The academic year starts the first week of June and lasts until October. The second semester begins in November and lasts until February of the following year. There is no summer school for the regular pharmacy program. Only the students who fail a class during the regular session need attend summer school.

Each year, all students who graduate from high school with a science major are eligible to apply for the pharmacy program. A nationwide entrance examination is held in the month of April. Students choose a maximum of six fields of study and are asked to rank them according to their preference when filling out the application form for the college entrance examination. The computer matches their scores with the ranks selected, and matches are announced the third week of May. Those with higher scores will have priority to be admitted to their field of choice. If this field is full, they will be accepted into the next field, respectively. Medical school is most often the first field of choice, with pharmacy or dentistry as second choice. Some students enter the prepharmacy curriculum and retake the entrance exam in hope of obtaining a higher score so that they may be accepted into medical school.

After the students are matched, they are interviewed by the pharmacy faculty committee before the final admission decision is made. About 500 students are accepted to the pharmacy program

each year; however, the number of students who graduate is less than the number accepted because of attrition.

Students who graduate from a Thai pharmacy school receive their licenses without taking a licensure exam, while those who earn a pharmacy degree from a country other than Thailand must take a licensure examination. The highest number of applicants for this exam are those who graduate from the pharmacy schools in the Philippines. Once a license is issued, it allows the pharmacist to practice anywhere in Thailand, and no renewal is required. A license may be revoked if a pharmacist practices illegally. Licensing authority is under the supervision of the Ministry of Health. More specific information about pharmaceutical education in Thailand can be found in the 1991 spring issue of the *American Journal of Pharmaceutical Education* (10).

STUDY OBJECTIVES

The objectives of this study were to examine areas of practice selected by Thai pharmacy students, interest in pursuing a higher degree, motivations and barriers in pursuing a graduate degree, areas of study selected at the graduate level, preferences for graduate study (native versus foreign institutions), and differences between Thai and American pharmacy students' plans.

METHODOLOGY

A survey was conducted to determine the postgraduate plans of undergraduate pharmacy students in Thailand. One objective was to compare Thai pharmacy students and American pharmacy students; therefore, some questions used in this survey were similar to those used in an American study (9). The questionnaire was written in English, then translated into Thai by one of the authors and a Thai colleague at the University of Texas College of Pharmacy. It was printed with a Thai font and presented in booklet form.

In December 1987, the author contacted the deans of two schools of pharmacy in Bangkok. A formal letter with a sample of the questionnaire was used to obtain approval for conducting the study. The

day and the time selected for data collection were based on convenience.

In January 1988, the author introduced herself to the students at the end of each class with the approval of the associate dean of student affairs. In each school, only the fourth- and fifth-year students were surveyed. During the introduction, students were told the topic of the study and instructed about completion and return of the questionnaire. Students who did not attend class on the day selected were not included in this study sample.

A total of 350 students completed and returned the questionnaires. Based on the total number of undergraduate Thai pharmacy students in a five-year program, this number represents approximately 34% of all fourth- and fifth-year pharmacy students at all six pharmacy schools in Thailand (10). In January 1988, all returned questionnaires were brought to the University of Texas-Austin. Data were keypunched and saved on a file at the university computation center. The SAS (Statistical Analysis Software®) was used for data analyses. An alpha level of 0.05 was chosen as a significant level in this study.

RESULTS

Demographics

Of the 350 Thai pharmacy students, 194 (55.4%) were from Chulalongkorn University, and 156 (44.6%) were from Mahidol University. A total of 184 were fourth-year students (52.6%), and 158 were fifth-year students (45.1%). Eight students (2.3%) failed to indicate their year of study. Female pharmacy students ($n = 214$) comprised 61.4% of the sample. The average age of the students ($n = 339$) was 22.21 ± 1.08 years. The average GPA ($n = 333$) was 2.70 ± 0.42 on a 4.0 scale. The average GPA for female pharmacy students (2.76 ± 0.42 , $n = 206$) was higher than the average GPA for male pharmacy students (2.60 ± 0.41 , $n = 127$, $p < 0.01$).

Planned Areas of Practice

Thai pharmacy students were asked to indicate the area of practice they planned to pursue upon graduation. Based on the total number of responses, the top five areas chosen were: hospital (41.2%), medical representative (26.5%), industry (23.8%), retail (20.6%), and business owner (3.2%). The top three careers chosen by male pharmacy students were: medical representative (37.3%), hospital (34.9%), and industry (19.8%). Female pharmacy students selected hospital (44.6%) as their first choice, industry (26.3%) as their second choice, and retail (23.5%) as their third choice.

Decision to Continue Education at the Graduate Level

The students were asked, "Do you plan to continue your education at the graduate level?" Students who checked "Yes" and "Undecided" were told to complete the rest of the questionnaire. Those who indicated "No" were asked to indicate the reasons why they chose not to continue their education. Of 350 Thai pharmacy students, 35.1% ($n = 123$) indicated "Yes," 30.6% ($n = 107$) indicated "No," 33.4% ($n = 117$) were "Undecided," and 3 students failed to answer this question. For comparison, 40.7% of American pharmacy students ($n = 211$) indicated "Yes," 26.4% ($n = 136$) stated "No," 32.9% ($n = 171$) were undecided, and 1 student failed to answer the question (9). Table 1 describes the results, controlling for gender. A greater proportion of women (36.8%) than men (31.5%) indicated that they planned to continue their education ($p < 0.01$). Conversely, the American study found that a greater percentage of men (47.5%) than women (36.9%) planned to continue their education.

The top five reasons given by students who chose not to continue their education were: weak financial status and financial family burden (33.9%), desire to work (30.4%), student burnout (26.1%), having a B.S. degree is sufficient (18.3%), and low GPA (13.9%).*¹

¹An * indicates an open-ended question. Some respondents gave more than 1 response; therefore, the percentages may add up to more than 100%.

TABLE 1. Decision to Continue Education by Thai and American Pharmacy Students by Gender

Decision	Thai*			American†		
	Men	Women	Total	Men	Women	Total
Yes (%)	40 (31.5)	78 (36.8)	118 (34.8)	87 (47.5)	123 (36.9)	210 (40.7)
No (%)	53 (41.7)	53 (25.0)	106 (31.3)	33 (18.0)	103 (30.9)	136 (26.4)
Undecided (%)	34 (26.8)	81 (38.2)	115 (33.9)	63 (34.4)	107 (32.1)	170 (32.9)
Total (%)	127 (100.0)	212 (100.0)	339** (100.0)	183 (99.9)†	333 (99.9)†	516†† (100.0)

*Chi-square = 10.8, df = 2, $p \leq 0.01$

**Frequency missing = 11

†Shepherd MD, Moore TS, Henderson ML, et al. Examination of postgraduate educational plans for academically superior undergraduate pharmacy students. Am J Pharm Educ 1988;52:1-9. Chi-square = 10.9, df = 2, $p \leq 0.05$

††Frequency missing = 3

‡Percent total varies by ± 0.1 due to rounding of value to one decimal place.

Several comparisons were conducted between the “Yes” group and the “Undecided” group. Results indicated that there were no statistically significant differences in most of these groups’ responses. The responses compared included time interval before getting a higher degree (chi-square = 7.54, $df = 4$, $p = 0.110$), degree chosen (chi-square = 3.96, $df = 2$, $p = 0.138$), area chosen (chi-square = 0.38, $df = 2$, $p = 0.827$), and field chosen (chi-square = 13.88, $df = 8$, $p = 0.085$). Therefore, these two groups were collapsed for further data analyses, and the rest of this section addresses the results of this collapsed group of 240 respondents.

Motivations to Continue Education

Thai students who planned to continue were asked: “What are the motivations that lead you to continue your education?” Based on the total number of responses, the top five motivations were: to gain knowledge (39.4%), to get a job promotion (38.5%), to obtain a higher degree (14.3%), to study an area I am interested in (13.4%), and to gain some experience (6.5%).*

Time Interval Between Undergraduate and Graduate Programs

Half of the Thai pharmacy students (49.8%) planned to continue their higher education 2-5 years after graduation. About one-sixth planned to continue their education right after graduation (16.7%) and one year after graduation (15.5%). Conversely, most American pharmacy students (43.1%) planned to continue right after graduation; one-fourth planned to continue 1 year after graduation (26.3%) and 2-5 years after graduation (23.4%). Table 2 shows these results by gender for Thai and American pharmacy students.

Degree Choice

The Thai pharmacy students who planned to continue were asked to indicate the type of graduate degree they wished to pursue. A high percentage of Thai students (81.2%) chose to continue their education at the master’s level, while only 3.8% selected a doctoral degree, and 12.6% selected both degrees. On the other hand, only 6.4% of American pharmacy students selected a master’s degree,

78 TABLE 2. Time Interval Between Undergraduate and Graduate Programs by Thai and American Pharmacy Students by Gender

Time	Thai*			American†		
	Men	Women	Total	Men	Women	Total
Right after (%)	17 (23.3)	22 (13.8)	39 (16.8)	45 (54.2)	45 (38.1)	90 (44.8)
1 yr. after (%)	6 (8.2)	30 (18.9)	36 (15.5)	25 (30.1)	30 (25.4)	55 (27.4)
2-5 yrs. after (%)	44 (60.3)	72 (45.3)	116 (50.0)	8 (9.6)	40 (34.0)	48 (23.9)
Other (%)	6 (8.2)	35 (22.0)	41 (17.7)	5 (6.0)	3 (2.5)	8 (4.0)
Total (%)	73 (100.0)	159 (100.0)	232** (100.0)	83 (99.9)†	118 (100.0)	201†† (100.1)†

*Chi-square = 13.9, df = 3, $p \leq 0.01$

**Frequency missing = 8

†Shepherd MD, Moore TS, Henderson ML, et al. Examination of postgraduate educational plans for academically superior undergraduate pharmacy students. Am J Pharm Educ 1988;52:1-9. Chi-square = 15.3, df = 3, $p \leq 0.05$

††Frequency missing = 10

‡Percent total varies by ± 0.1 due to rounding of value to one decimal place.

and 17.1% selected a Ph.D. In the American study, the most frequently selected degree was the Pharm.D., followed by the medical degree. Because there is no Pharm.D. degree in Thailand, this choice was not provided for Thai pharmacy students. As reported in one study of foreign pharmacy graduate students in the U.S., none of the Thai pharmacy graduates was enrolled in the Pharm.D. program (4). Also, the medical degree was not provided in the Thai pharmacy students' questionnaires because students who intend to go to medical school retake the nationwide entrance exam during their first two years of prepharmacy. Table 3 describes the degree choice for Thai pharmacy students by gender.

Areas of Graduate Study

Over half of the Thai pharmacy students (55.8%) surveyed chose to continue their education in nonpharmacy areas, while 40.8% chose a pharmacy-related area and 3.3% chose both pharmacy and nonpharmacy areas. When Thai male and female pharmacy students were compared, no significant difference was found (chi-square = 4.16, $df = 2$, $p = 0.125$).

Respondents were then asked to indicate the field of graduate study they planned to pursue. The top five fields chosen were: MBA (45.1%), clinical pharmacy (14.1%), pharmacology/toxicology (11.4%), medicinal chemistry (5.9%), and pharmacy administration (5.5%).

Institution Chosen (Native vs. Foreign Institutions)

Thai pharmacy students were asked if they planned to continue their education at a native or a foreign institution. Over half of them (58.8%) chose to study at native institutions, 34.3% chose foreign institutions, 6.4% selected both, and 1 student was undecided. No statistically significant difference was found between genders (chi-square = 1.79, $df = 2$, $p = 0.409$) or between those who had a high GPA (≥ 3.00) and those who had a low GPA (< 3.00) (chi-square = 1.70, $df = 2$, $p = 0.428$). However, the results were different when we compared fourth- and fifth-year pharmacy stu-

TABLE 3. Degree Choice by Thai Pharmacy Students by Gender

Degree	Male		Female		Total	
	Frequency	%	Frequency	%	Frequency	%
M.S.	53	79.1	135	84.9	188	83.2
Ph.D.	1	1.5	8	5.0	9	4.0
Both	13	19.4	16	10.1	29	12.8
Total	67	100.0	159	100.0	226*	100.0

Chi-square = 4.878, df = 2, $p \leq 0.087$

*Frequency missing = 14

dents. Fifth-year students chose native institutions more often than fourth-year students ($\chi^2 = 7.27$, $df = 2$, $p = 0.026$).

Next, students who selected native institutions were asked to indicate the university they wanted to attend, while those who selected foreign institutions were asked to indicate the country they preferred. Among the native institutions mentioned, the top three universities selected were: Chulalongkorn University (41.1%), Thammasart University (27.4%), and Mahidol University (21.9%).* For those planning to continue their education outside Thailand, the top three foreign countries chosen were: the U.S. (87.0%), the United Kingdom (10.8%), and Australia (9.8%).* It should be noted that English is the national language of these three countries.

Finally, the respondents were asked to state the reasons for their choice of institutions. The top five reasons given for choosing native institutions were: they are less expensive (58.6%), they are more convenient (22.9%), I would be able to work while studying (12.1%), I would encounter less adaptation problems (11.4%), and programs in my area of interest are available (10.0%).* When male and female students were compared, it was found that their top two reasons were the same. Male pharmacy students cited working while attending college as the third most common factor, whereas female students focused on the problems of adaptation.

For students who selected foreign institutions, the top five reasons were: to gain experience (39.4%), to gain language proficiency (23.2%), high technology offered (22.2%), broad knowledge base (12.1%), and I can afford to attend (7.1%).*

LIMITATIONS

It is important to address the limitations of this study. First, the results of this study were based on a convenience sample, not a random sample. Second, not all pharmacy schools in Thailand were included; only two of them were surveyed. Results might be different if all six pharmacy schools were surveyed. Third, any comparisons between Thai and American pharmacy students should be interpreted with great caution because of the differences in the pharmacy programs (Pharm.D. in the U.S. versus no Pharm.D. in Thailand) and sample representation (superior students sample in

the U.S. versus nonsuperior students sample in Thailand). However, such comparisons may be of some use to American readers.

DISCUSSION AND CONCLUSIONS

A large percentage of Thai students planned to practice pharmacy in a hospital upon graduation. A total of 35% indicated that they planned to continue their education at the graduate level, with another 33% indicating that they were undecided. This is similar to the responses obtained in an American study. A higher percentage of Thai female pharmacy students than Thai male students planned to continue their education, whereas among American students the opposite was found to be true. Most Thai students planned to continue their education 2-5 years after graduation, while most American students planned to continue right after graduation.

The top two motivations to continue education are to gain knowledge and to get a job promotion. The top two barriers are weak financial status and the desire to work.

Most of the Thai students chose to continue their education to obtain a master's degree, and many were interested in a nonpharmacy area (mainly business). Most American students, however, planned to earn a Pharm.D. About one-third of the respondents indicated that they planned to pursue their graduate studies outside of Thailand, with 87% of these choosing to study in the U.S. This indicates that American pharmacy schools may be reviewing more applications from Thai pharmacy students, although many Thai students may be applying to business schools. There will be an increasing demand for American pharmacy schools from foreign pharmacy students as supported by the three-year enrollment data. Because there are no graduate programs in pharmacy administration in Thailand, students may not be aware of the option to learn business skills through a college of pharmacy. As this field expands in Thailand, one may see more students pursuing this field of study.

Based on the results of this study, there is a need to increase Thai pharmacy students' awareness of the importance of pharmacy graduate education and a need to promote higher degree education, especially a Ph.D. in a pharmacy-related area, because only 35% of the students surveyed planned to continue their education, only

3.8% of these selected a doctoral degree, and there was a trend that showed a higher interest in nonpharmacy areas (50.8%) than in pharmacy-related areas (40.8%). Thai pharmacy education may experience manpower shortages because of the lower number of those who have a Ph.D. in a pharmacy-related area.

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