Career Choice of Malaysian Pharmacy Students: A Preliminary Analysis

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ABSTRACT

A cross-sectional study was conducted among pharmacy students to determine factors influencing their choice of work place and to evaluate whether a one-year hospital pre-registration training programme had any effect on these choices. Questionnaires were distributed to graduating students at the School of Pharmaceutical Sciences, Universiti Sains Malaysia. The questionnaires were again sent to the same group of students by post at the end of their pre-registration training year. The response rate during the follow-up stage was 46%. Results indicated that students in the survey were more interested in independent and chain community pharmacies compared to other practice settings. Students' choices of first place of practice appeared to be influenced by both intrinsic and extrinsic job factors. Our findings did not show major changes in students' preferences for practice sites before and after the hospital pre-registration period. This information is expected to be useful for pharmacy employers.

Key words: pharmacy, career choice, job factor, workplace, Malaysia

INTRODUCTION

Changes within the pharmacy profession over the past 15 – 20 years have been inspiring. Pharmacy is expected to continue to be an exciting and innovative field in the coming new systems of health care. It will provide new roles and opportunities for pharmacists to serve the health care needs of the society. Therefore, future pharmacists need to make wise decisions regarding educational and professional preparedness, keeping in mind the mobility and flexibility of career positions.

Until 1995, there was only one pharmacy school in

Malaysia. Pharmacy students at Universiti Sains Malaysia (USM) undergo a 4-year academic programme towards a Bachelor of Pharmacy degree. The curriculum for the first three years consists of basic pharmaceutical science subjects under the general categories of pharmaceutical chemistry, pharmaceutical technology, physiology and pharmacology. Students are exposed to clinical pharmacy curriculum during their fourth academic year (1). They spend an average of 20 hours per week at a university hospital for their clinical attachments. They rotate through various clinical pharmacy services, medical and surgical-

based attachments, including attachments at various community pharmacy outlets. After graduating, they undergo a one-year training programme at a recognized pharmacy institution before they are registered with the Malaysian Pharmacy Board. This training is also known as pre-registration training, similar to that practised in the United Kingdom.

As a preliminary study, we decided to evaluate pharmacy students' choices of practice sites upon graduation and the factors influencing these choices. Since this coincided with the compulsory one-year pre-registration training programme, we were also interested to see whether this training had any influence on the students' choices. We believe that this information will be useful to potential employers when recruiting newly registered pharmacists.

METHODS

Survey questionnaires were distributed to 71 graduating pharmacy students at USM after their final examinations. The questionnaires asked for demographic data, preference of practice sites, previous experience or work, and whether any of their immediate family members were health professionals. Students were also asked to rate the importance of identified factors (2), which they thought would affect their preference of practice sites. These were rated on the Likert scale of 1 to 5 (1 = extremely important, 5 = extremely unimportant). These questionnaires were designed

in the national language (i.e., Malay). To determine its clarity, the questionnaire was pre-tested on hospital pharmacists and Master of Clinical Pharmacy students at the university. For some questions, students were allowed to check more than one answer. Towards the end of the one-year pre-registration training, another questionnaire was mailed to the same batch of students to their respective home addresses.

Data were analysed using the *Statistical Package for Social Sciences* (SPSS) Version 7.5 (SPSS Inc., Ill). Descriptive data are presented as percentages. Discrete data were analysed by chi-square or Fisher's Exact tests. Significance level chosen for statistical testing was 0.05.

RESULTS

All 71 final year students (100%) took part in the first evaluation (before pre-registration). Thirty-three responded after pre-registration training giving a response rate of 46%. All students underwent a one-year period of pre-registration training at government hospitals.

Demographic data

The mean age of students at the time of graduation was 24.3 years old and nearly two-thirds were females. Malay students constituted approximately half of the graduating class. The number of respondents before and after pre-registration training based on gender and race were not statistically significant (Table 1).

Table 1. Demographic data of students who responded to both surveys.

	Before pre-registration (n=71)	After pre-registration (n=33)	Chi-Square Test/Fisher's Exact Test
Gender			P=0.661 (NS)
Male	24 (34%)	12 (36%)	
Female	46 (65%)	19 (58%)	
Race			P=0.839 (NS)
Malay	37 (52%)	15 (45%)	
Chinese	23 (32%)	12 (36%)	
Indian	7 (10%)	2 (6%)	
Other	2 (3%)	2 (6%)	
Note: The total percentages are not equal to 100 due to missing values NS=not significant			

Majority of students did not have a family member (defined as parents or siblings) as a health professional. Five however, had a pharmacist, three had doctors, one had a dentist, four had nurses, one had a pharmacy technician and one had a medical assistant among their family members.

Relationship between gender and race with desired place of work

The most common preferred place of work in decreasing order was, independent community pharmacy, chain community pharmacy, government hospital, private hospital, and pharmaceutical industry (Table 2).

When grouped according to three major places of work (i.e. hospital pharmacy, community pharmacy, industry), over 60% of female students planned on going into community pharmacy, and just under 30% planned on pursuing hospital work. Among male students, about 50% preferred community pharmacy, and about 30% planned to enter hospital pharmacy practice. The differences between gender preferences were not statistically significant ($p>0.05$).

Community pharmacy was the first choice among 87% Chinese students and 58.3% of the Malay students (Table 3). On the other hand, about 36% of the Malay students chose hospital pharmacy as compared to about 4 % of the Chinese students. Indian students were relatively equally divided in their choice of desired places of work. The differences between races in terms of their desired places of work were not statistically significant ($p>0.05$).

Relationships between previous working experiences with the desired place of work

Table 4 shows that 60.6% students had experience working at pharmacies or drug stores; 43.7% at hospital pharmacies and 5.6% at pharmaceutical industries. When results for independent and chain community pharmacies were combined to give an overall picture of the choice for community pharmacy practice, a total of 43 students (61%) preferred to work at this site. Of these, 29 (67%) had worked at a pharmacy or drug store previously, 20 (46%) at a hospital pharmacy, and 2 (5%) in the pharmaceutical industry.

Table 2. Relationship between gender and desired place of work (first survey).				
	Male N (%)	Female N (%)	Total N (%)	Fisher's Exact Test
Government hospital	1 (4.3)	11 (23.9)	12 (17.4)	0.06 (NS)
Private hospital	6 (26.1)	2 (4.3)	8 (11.6)	
Independent community pharmacy	7 (30.4)	17 (37.0)	24 (34.8)	
Chain community pharmacy	5 (21.7)	14 (30.4)	19 (27.5)	
Pharmaceutical industry	2 (8.7)	2 (4.3)	4 (5.8)	
Postgraduate studies	1 (4.3)	0	1 (1.4)	
Others	1 (4.3)	0	1 (1.4)	
Total	23 (100)	46 (100)	69 (100)	
Note: The total number of students are not equal to 71 due to missing values. The percentages are based on the number of students responded on the items NS=not significant				

Table 3. Relationship between race and desired place of work (first survey).

	Malay N (%)	Chinese N (%)	Indian N (%)	Other N (%)	Total N (%)	Fisher's Exact Test
Government hospital	9 (25.0)	1 (4.3)	1 (14.3)	1 (33.3)	12 (17.4)	0.06 (NS)
Private hospital	4 (11.1)	0 (0)	2 (28.6)	2 (66.6)	8 (11.6)	
Independent community pharmacy	11 (30.5)	12 (52.2)	1 (14.3)	0	24 (34.8)	
Chain community pharmacy	10 (27.8)	8 (34.8)	1 (14.3)	0	19 (27.5)	
Pharmaceutical industry	2 (5.6)	1 (4.3)	1 (14.3)	0	4 (5.8)	
Postgraduate studies	0	0	1 (14.3)	0	1 (1.4)	
Other	0	1 (4.3)	0	0	1 (1.4)	
Total	36 (100)	23 (100)	7 (100)	3 (100)	69 (100)	

Note: The total number of students are not equal to 71 due to missing values
The percentages are based on the number of students responded on the items
NS=not significant

Table 4. Relationship between previous working experiences with the desired place of work (first survey).

Previous working experience ^b	Desired place of work ^a							
	Government hospital	Private hospital	Independent community pharmacy	Chain community pharmacy	Pharmaceu- tical industry	Post graduate studies	Other	Total
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N(%)	N(%)
Pharmacy/ drug store								
Yes	7 (16.3)	6 (14.0)	16 (37.2)	13 (30.2)	1 (2.3)	0	0	43 (100)
No	6 (21.4)	3 (10.7)	8 (28.6)	6 (21.4)	3 (10.7)	13 (3.6)	1 (3.6)	28 (100)
Hospital pharmacy								
Yes	4 (12.9)	5 (16.1)	8 (25.8)	12 (38.7)	2 (6.5)	0	0	31 (100)
No	9 (22.5)	4 (10.0)	16 (40.0)	7 (17.5)	2 (5.0)	1 (0.03)	1 (0.03)	40 (100)
Pharmaceu- tical industry								
Yes	1 (25.0)	1 (25.0)	1 (25.0)	1 (25.0)	0	0	0	4 (100)
No	12 (17.9)	8 (11.9)	23 (34.3)	18 (26.9)	4 (6.0)	1 (1.5)	1 (1.5)	67 (100)

^a only one practice choice was allowed

^b each student may choose more than one answer

Similarly, when results for government and private hospitals were combined as hospital pharmacy practice, a total of 22 students (31%) preferred to work at this site. Of these, 13 (59%) had previously worked at pharmacies or drug-stores, 9 (41%) at hospital pharmacies and 2 (9%) at industry-based pharmacies.

Thus, the majority of those who preferred community pharmacy had previous experience at pharmacies or drug-stores. On the other hand, among those who preferred hospital pharmacy as their future place of work, only 41% had previous experience with hospital work.

Of the four students who preferred industry-based pharmacies, one had worked at a pharmacy or a drug-store and two at hospital pharmacies. None worked at industry-based pharmacies before.

Desired place of work/practice before and after pre-registration training

Table 5 demonstrates the students' desired places of work before and after pre-registration training. The majority showed interest in community pharmacy (i.e., independent and chain) both before and after the training (61% and 57%, respectively). The percentages of students who chose hospital setting (combined both government and private settings) before and after pre-registration period were 31% and 24%, respectively. Only a small percentage chose pharmaceutical industry. Overall, the results did not show major changes in students'

preferences for practice sites before and after the pre-registration training. However, overall results showed a drop in percentages for most practice sites.

Factors affecting practice choices

The top ten factors that students believed affected their choices of future practice sites before pre-registration training were desire for a satisfying and self-fulfilling position, job security, opportunity for advancement, salary, sense of accomplishment, opportunity to use one's abilities and education, opportunity to serve the community, geographic location, nature of work and employer's policies (Table 6). Except for employer's policies, these remained in the top ten categories of factors even after the pre-registration training period. None of the changes in ratings which occurred after the pre-registration period were statistically significant.

DISCUSSION

There was not much difference between the proportion of female and male students in our student population as compared to recent enrollments in the US schools of pharmacy (3). The majority of our students did not have any family member working as a health professional.

Parents might exert significant influence on students' decision to choose pharmacy as a career

Table 5. Respondents desired place of work before and after pre-registration training

Desired place of work	Before pre-registration (n=71)	After pre-registration (n=33)
Independent community Pharmacy	24 (34%)	7 (21%)
Chain community Pharmacy	19 (27%)	12 (36%)
Government hospital	13 (18%)	4 (12%)
Private hospital	9 (13%)	4 (12%)
Pharmaceutical industry	4 (6%)	1 (3%)
Postgraduate studies	1 (1%)	1 (3%)
Others	1 (1%)	3 (9%)

Note: The total percentages are not equal to 100 due to missing values

Table 6. Top ten rating of respondents' perception of factors affecting choice of future workplace

	Factors	Before pre-registration mean (SD)	After pre- registration mean (SD)	Student's t-test
1	Desire for a satisfying and self-fulfilling position	1.6 (0.6)	1.7 (0.9)	NS ^a
2	Job security	1.6 (0.8)	1.9 (1.0)	NS ^a
3	Opportunity for advancement	1.6 (0.7)	1.6 (0.9)	NS ^a
4	Salary	1.7 (0.7)	1.8 (0.7)	NS ^a
5	Sense of accomplishment	1.8 (0.8)	1.7 (0.7)	NS ^a
6	Opportunity to use one's abilities and education	1.8 (0.8)	1.5 (0.8)	NS ^a
7	Opportunity to serve community	1.8 (0.7)	1.8 (0.7)	NS ^a
8	Geographic location	1.8 (0.8)	1.8 (0.8)	NS ^a
9	Nature of work	1.9 (0.8)	1.8 (0.8)	NS ^a
10	Employer's policies	1.9 (0.8)	2.1 (0.9)	NS ^a
^a All comparisons were not significantly different at alpha level of 0.05				

(4), but our results showed that this factor was not among the ten most important factors (Table 6) in influencing their choice of field work as a pharmacist.

It is interesting to see that government and private hospital practices were less favoured by students compared to independent or chain community pharmacies. These choices were similar to those reported by others (2,4). The findings may partially explain the consistently low "filling rate" for the positions of pharmacist in government hospitals. In 1995, the Malaysian Ministry of Health (MOH) annual report showed that of the 570 positions for staff pharmacists available at government hospitals, only 341 were filled (5). This trend has been consistent for the last few years where the "filling rate" was only around 60% (6,7).

Studies on gender difference in preference for practice sites have shown conflicting results (4,8). Our results showed that only about one-third of the total number of female students would like to go into hospital pharmacy practice. However, intended and actual practice settings tend to differ. In fact, among pharmacy practitioners,

investigators have shown a growing trend of similarity in gender distributions of practice settings (9, 10). It is interesting to see from our findings that community pharmacy practice seemed to be more favourable among Chinese students whereas hospital pharmacy practice seemed to be more favourable among Malay students. This tendency for a difference in racial preference of practice sites needs to be further explored.

Approximately half of our students had previous experiences either at hospital pharmacies, community pharmacies or drug stores. Previous experience at a hospital pharmacy did not have much effect on students' preference to practise at hospitals (29%). On the other hand, previous experience at a pharmacy or drug-store might have influenced many students (67%) on their preference to practise at a community pharmacy. In general, regardless of whether students had previous working experience or not, the community pharmacy setting was the most desired place of work.

Factors known as intrinsic factors are associated with good feelings about a job, and that bad

feelings are associated with extrinsic factors. Intrinsic factors include the nature of work, desire for a satisfying and self-fulfilling position, opportunity for advancement, sense of accomplishment, opportunity to use one's abilities and education, and opportunity to serve the community. Extrinsic factors include job security, salary, geographic location, availability of position, working conditions, influence of family, friends or professors, and employer's policies. As reported by others (1,11), the results from our survey showed that a combination of these job factors were involved in students' selection of practice sites. Although six out of ten were intrinsic factors, this may change once in the profession. Other factors may also affect pharmacists' choice of current practice sites (12) and most of them can be considered as extrinsic factors (e.g. income potential, and influence of spouse).

Our findings showed that hospital pre-registration experience did not have a major effect on the choice of practice sites. In one study, it was found that although the percentage of students who participated in a hospital internship programme was high, there was a lower percentage of students who selected a career in hospital pharmacies when compared to community pharmacies (11). The authors suggested that the activities students did

during their internship might not be viewed as personally rewarding by many of them. This might have influenced their lack of preference for hospital pharmacy practice. Hospital pre-registration in our setting may not be similar to hospital internship programme practised in the US but suggestions to improve students' experience in hospital setting (11) may be applicable to ours. This includes providing a more structured programme which provides emphasis in the operations, administration and patient - oriented pharmaceutical services to enable students to experience hospital pharmacy practice in greater depth.

CONCLUSION

This survey provides some insights into the reasons why pharmacy graduates choose their first site of practice. An understanding of the factors that influence graduates' practice-site choices is important if employers wish to design effective strategies to employ future pharmacists. Our findings did not show major changes in students' preferences for practice sites before and after the hospital pre-registration period. Speculation that students would be more inclined toward hospital practice because of additional clinical education in their final year is not supported by our data.

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