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Future Career Preferences of Final Year Bachelor of Pharmacy Students upon Graduation from Public and Private Universities in the Northern Region of Malaysia

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ABSTRACT

Objectives: To identify the future career preferences among graduating pharmacy students from public and private universities in the northern region of Malaysia and exploring factors influencing the respondents' choice to work in future as well as their expected starting monthly salary.

Methods: A questionnaire based, cross sectional study was conducted among final year Bachelor of Pharmacy students from one public and one private universities in the northern region of Malaysia. Descriptive and inferential statistics were used to analyse the data.

Key finding: A total of 175 respondents participated in the study. 72.60% of respondents were female. In terms of ethnicity, 63.40% of the respondents were Chinese, 20.00% were Malay, 11.40% were Indian and 5.10% were of other ethnicities. Public hospital remained the first choice of area of work upon graduation for students from both public and private universities. In the public university, the working environment was the most highly ranked influential factor (mean score: 4.54). Meanwhile, In the private university, professional development was the most highly ranked influential factor (mean score: 4.23). Greater than half of the students from public and private universities indicated that their expected starting monthly wages ranges between RM 3000 to RM 4000 (55.5% vs. 62.6%).

Conclusion: The most preferred career options for students from both public and private universities are public hospital. The working environment, job security, opportunity in professional development and attractive salary are the most remarkable influencing factors in selecting a future career. The acceptable starting monthly salaries by students from both public and private universities range between RM 3001 to RM 4000.

Keywords: Career, graduate, pharmacy students, public versus private, Malaysia

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INTRODUCTION

In this 21st century, the scope of the pharmacy practice and the role of pharmacy have been greatly evolved. Along with the increase in the public expectations, workforce pressures and advances in both science and technology, the contribution that has been made by the pharmacist to the society has to be delineated. Until now, the attempts that have been made in creating a generic definition of what a pharmacist is meant to be are strewn with obstacles and pitfalls [1]. Looking back at the 20th century, pharmacists normally involved in preparing and compounding medicines. As time goes by, the focus of pharmacists is now shifted from product-oriented to patient-oriented professional service. An inter-relationship started to be built between the pharmacists with other healthcare professionals and pharmacists started to get involved in a wider range of professional settings. This is what we call the evolution of the profession as the role of pharmacists will continue to change alongside the needs and also the expectations from the patients and service [2]. For the pharmacy profession to shift towards a patient-centered profession, the most important aspects will be pharmacy education. The undergraduate and postgraduate pharmacy programs will be offered by both the public and private universities in Malaysia. Postgraduate pharmacy programs will be offered in six major disciplines that include Clinical Pharmacy, Pharmaceutical Chemistry, Pharmaceutical Technology, Pharmacology, Physiology and Social and Administrative Pharmacy [3].

For a pharmacist to be qualified as a registered pharmacist in Malaysia upon the undergraduate pharmacy graduation, he or she has to undergo a Provisionally Registered Pharmacists (PRP) Training in accredited premises approved by the Pharmacy Board Malaysia [3,4]. Due to the paucity of the pharmacists in some non-hospital institutions especially the pharmaceutical industry and research and development sectors, a change in the usual trend has been made. In October 2012, the PRP training program was known to be liberalized where graduated pharmacy students have the chance to practice at the recognized community pharmacies, private hospitals, pharmaceutical industries and pharmacy faculties with the research and development activities. At the same time, the graduates will not only fully depend on the training facilities at the government hospitals, but they will be having the opportunities to practice in different pharmacy sectors. Eventually, globalization is expected to be achieved by virtue of the shifting of the pharmacy graduates from the hospital settings to other non-hospital training sites [4].

In such a way, it is crucial in ensuring the students have the chance to practice in different pharmacy settings to make informed career options whilst providing an environment where the students are able to consider many different career options. Through the cross-sector placement and the PRP training, students or the newly graduated pharmacist will be having the opportunity to explore different practical and soft skills that should be developed by them to become proficient pharmacists in the future.

Notwithstanding for them to examine the roles of the pharmacists in different settings, the way the pharmacist's team up with other healthcare professionals can also be observed. The cross-sector experience helps in forming the newly qualified pharmacists that are able to practice in a variety of pharmacy settings and it aids in emphasizing how various roles can be played by the pharmacists when they are working in different sectors [4,5].

1.1 Aims of the study.

The aims of this study were to identify the future career preferences for final year Bachelor of Pharmacy students upon graduation from public and private universities in the northern region of Malaysia and exploring factors influencing the respondents' choice to work in future as well as their expected starting monthly salary.

METHODS

Questionnaire development

The questionnaire that had been used for this study was adapted from the precise review of variables and factors used in previous studies to aid in comparing the result for the study [6-19]. The questionnaire was designed in the International language, English. This questionnaire consists of two main sections. Items in the first section of the questionnaire collected the demographic data of the participants. Items in the second section collected data on students' job preferences, factors influencing their choice of career and their expected monthly salary. The items that have been asked in the second section were rated using a five-point Likert scale ranging from 1 (not important or not relevant at all) to 5 (very important or very relevant) and also ranking scale. The draft questionnaire had been validated by five academicians from both public and private universities who have the knowledge on the topics and research study for the content and face validation purposes. Suggestions obtained from these individuals were incorporated and compiled into a final draft. The questionnaire was then pilot tested on 13 randomly selected individuals from public university and 10 randomly selected final year students from private university which was approximately 10% of the sample size and these individuals were being excluded from the main study. The reliability of the questionnaire was evaluated by having them to complete two questionnaires on Google form, one week apart. As per other pre-post studies, the period of seven days was felt to be sufficiently long to minimize the recall of what they have been answered on the first occasion and sufficiently short to minimize the development of consistent changes in response [20,21]. The Cronbach's alpha was 0.993, suggesting that the items in the questionnaire have relatively high internal consistency. Kappa test aids in accessing the level of agreement between two respondents that classify a sample of objects on the same categorical scale. Kappa value was reported as 1 and it represented a perfect agreement as the students assigned every subject with the same rating in which case kappa is indeterminate [22]. Lastly, the validity test shows that there are no missing cases and there were 14 valid and 100% validity for the test [23].

Study approval

Study approval to conduct the research and permission to collect the data from the students was obtained from Human Ethics Committee of the university (AUHEC/FOP/2020/12). An informed consent was obtained by the participant prior to the distribution of survey forms. Participants were informed about the purpose and design of the study and assured that participation was voluntary and confidential. Participants were assured that their personal information and responses will be kept confidential. Completed questionnaires were then returned to the principal investigator.

Statistical analysis

Data were analyzed using IBM Statistical Package for Social Sciences Statistics for Windows, Version 24.0. (IBM Corp., Armonk, N. Y., USA). Descriptive statistics, a brief descriptive coefficient summarizes the demographic characteristics of participants. The relationship between different variables of demographic data had been summarized using cross-tabulation and chi-square tests (or fisher exact test). Frequency procedure produces summary measures for the categorical variables including their future career preferences in the form of frequency tables. Mann-Whitney Test that compares the difference between 2 independent groups when the dependent variable is either ordinal or continuous had been used to understand the importance of general job considerations on students' career choices (dependent variable) differed based on the gender (independent variable).

RESULTS

Respondents' characteristics

A total of 175 respondents from one private university and one public university in the northern region of Malaysia participated in the study, representing 80.27% of the total population of 218 final year Bachelor of Pharmacy students in public and private education at the time of sampling. The general demographic characteristics of respondents are summarized in table 1.0. 72.60% of respondents were female. In terms of ethnicity, 63.40% of the respondents were Chinese, 20.00% were Malay, 11.40% were Indian and 5.10% were of other ethnicities. 96.60% of the respondents were single and 3.40% were married. 82.30% of the respondents were not scholarship holders while the other 17.70% were scholarship recipients. The parents' occupations were from private sector 44.00%, self-employed 31.40% and civil service 24.60%. The age median was 23 years old. No statistically significant differences were observed between public and private universities in terms of gender and age, $p > 0.05$. Public university recorded higher proportion of Malay students (38.04%) while private university revealed greater numbers of Chinese students (84.34%), $p < 0.01$. Similar observation was observed in the scholarship recipient status of respondents from public and private universities by which 30.43% of respondents from public university reported receiving scholarships as compared to 3.61% in private university, $p < 0.01$. Greater than half (55.52%) of the private university respondents' parents work in the private sector while 35.87% of parents for students from public university work in the civil services, $p = 0.001$.

Table 1: Demographic characteristics of respondents

Variables	Number of respondents (n=175)
Gender	
Male	48 (27.40%)

Female	127 (72.60%)		
Ethnicity			
Malay	35(20.00%)		
Chinese	111(63.40%)		
Indian	20(11.40%)		
Other	9(5.10%)		
Marital status			
Married	6(3.40%)		
Single	169(96.60%)		
Scholarship Recipient			
No	144(82.30%)		
Yes	31(17.70%)		
Institution of Study			
Public	92(52.60%)		
Private	83(47.40%)		
Parent's Occupation			
Civil service	43(24.60%)		
Private sector	77(44.00%)		
Self-employed	55(31.40%)		
Age$^{\alpha}$ (years)	23.00 (IQR:0.04)		
Classification of respondents according to study institution			
Variables	**Public university (n=92)**	**Private university (n=83)**	Institution p value
Gender			
Male	24 (26.09%)	24 (28.92%)	**0.736$^{\beta}$**
Female	68 (73.91%)	59 (71.08%)	
Ethnicity			
Malay	35 (38.04%)	0 (0.00%)	**<0.01$^{\beta}$**
Chinese	41 (44.57%)	70 (84.34%)	
Indian	9 (9.78%)	11 (13.25%)	
Other	7 (7.61%)	2 (2.41%)	
Marital status			
Married	6 (6.52%)	0 (0.00%)	**0.03$^{\gamma}$**
Single	86 (93.48%)	83 (100.00%)	
Scholarship Recipient			
No	64 (69.57%)	80 (96.39%)	**<0.01$^{\beta}$**
Yes	28 (30.43%)	3 (3.61%)	
Parent's Occupation			
Civil service	33(35.87%)	10(12.05%)	**0.001$^{\beta}$**
Private sector	31(33.70%)	46(55.42%)	
Self-employed	28(30.43%)	27(32.53%)	
Age† (years)	23	23	**0.171$^{\delta}$**

α-Median (IQR) – Data not normally distributed
β-Chi-square test
γ-Fisher exact test
δ-Mann-Whitney U test

Future career preferences for final year Bachelor of Pharmacy students

The future career preferences upon graduation were summarized in table 2.0. Public hospital remained the first choice of area of work upon graduation for final year Bachelor of pharmacy programme students in both public and private universities. Private hospital and chain community pharmacy were the second and third choices of future career preferences for students from public university. On the other hand, chain community pharmacy and pharmaceutical industries were the reported second and third choices of future career for students from private university. The discrepancies of future career options between public and private universities were statistically significantly different, $p< 0.05$. Approximately 2% of respondents from public and private universities students revealed that they would like to venture into a non-pharmacy related career upon graduation (2.17% vs. 2.41%). The top five preferred areas of work (based on respondent's first choice) upon graduation between public and private universities was summarized in figure 1.0. Compounding pharmacy, sales and marketing as well as clinical research were the least popular option for respondents from public university. Meanwhile, no respondent from private university was interested to venture into compounding pharmacy, sales and marketing as well as regulatory pharmacy upon graduation.

Table 2: Future career preferences for final year Bachelor of Pharmacy students upon graduation from public and private universities in the northern region of Malaysia

1St Choice			
Preference	**Public (n=92)**	**Private (n=83)**	**P valueγ**
Public Hospital	69(75.00%)	49(59.04%)	<0.001
Private Hospital	4(4.35%)	0(0.00%)	
Independent Community Pharmacy	1(1.09%)	6(7.23%)	
Chain Community Pharmacy	3(3.26%)	18(22.89%)	
Compounding Pharmacy	1(1.09%)	0(0.00%)	
Pharmaceutical Industries	2(2.17%)	3(3.61%)	
Sales and Marketing	1(1.09%)	0(0.00%)	
Clinical Research	0(0.00%)	1(1.20%)	
Regulatory Pharmacy	5(5.43%)	0(0.00%)	
Academia	4(4.35%)	3(3.61%)	
Others (not related to pharmacy)	2(2.17%)	2(2.41%)	
2nd Choice			
Preference	**Public (n=92)**	**Private (n=83)**	**P valueγ**
Public Hospital	9(9.78%)	13(15.66%)	0.016
Private Hospital	31(33.70%)	17(20.48%)	
Independent Community Pharmacy	16(17.39%)	10(12.05%)	
Chain Community Pharmacy	18(19.57%)	23(27.71%)	
Compounding Pharmacy	1(1.09%)	1(1.20%)	
Pharmaceutical Industries	3(3.26%)	8(9.64%)	
Sales and Marketing	0(0.00%)	4(4.82%)	
Clinical Research	6(6.52%)	2(2.41%)	
Regulatory Pharmacy	6(6.52%)	1(1.20%)	
Academia	1(1.09%)	3(3.61%)	
Others (not related to pharmacy)	0(0.00%)	1(1.20%)	
3rd Choice			
Preference	**Public (n=92)**	**Private (n=83)**	**P valueγ**
Public Hospital	5(5.43%)	7(8.43%)	<0.001
Private Hospital	8(8.70%)	10(12.05%)	
Independent Community Pharmacy	14(15.22%)	8(9.64%)	
Chain Community Pharmacy	21(22.83%)	11(13.25%)	
Compounding Pharmacy	0(0.00%)	3(3.61%)	
Pharmaceutical Industries	9(9.78%)	18(21.69%)	
Sales and Marketing	3(3.26%)	12(14.46%)	
Clinical Research	3(3.26%)	4(4.82%)	
Regulatory Pharmacy	11(11.96%)	0(0.00%)	
Academia	12(13.04%)	8(9.64%)	
Others (not related to pharmacy)	2(2.17%)	2(2.41%)	
γ- Fisher exact test			

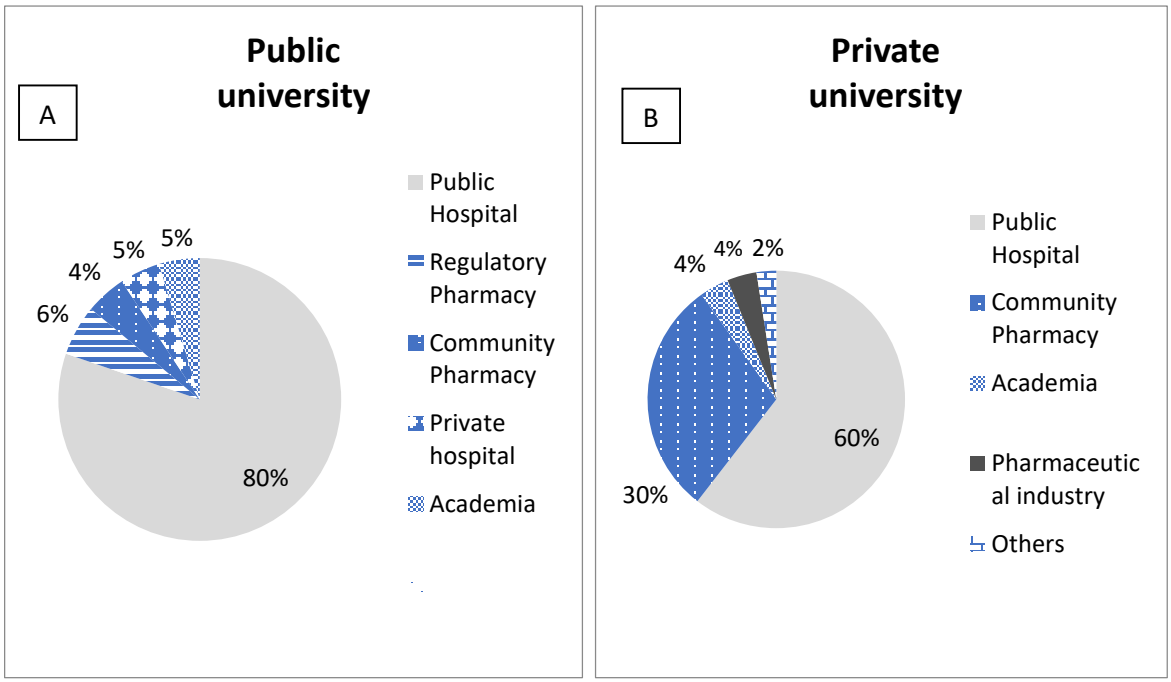

Figure 1: Top 5 future career preferences for final year Bachelor of Pharmacy students upon graduation from public and private universities

Ranked factors influencing the respondents' choice to work in future.

Weighted scores with rank order were calculated to explore the factors influencing the respondents' choice to work upon graduation in public and private universities. The factors in descending orders is summarized in table 3.0. Attractive starting salary was not the most influential factor noted in both respondents from public and private universities. In the public university, the working environment was the most highly ranked influential factor (mean score: 4.54); followed by job security (mean score: 4.49); professional development (mean score: 4.48); attractive salary (mean score: 4.35); advancement opportunities (mean score: 4.34); benefits (mean score: 4.23); geographic location (mean score: 4.04); opportunities in collaborating with other professionals (mean score: 4.03) and flexible work schedule (mean score: 4.00).

In the private university, professional development was the most highly ranked influential factor (mean score: 4.23); followed by working environment (mean score: 4.19); attractive salary (mean score: 4.13); job security (mean score: 4.12); advancement opportunity (mean score: 4.00); benefits (mean score: 3.94); flexible work schedule (mean score: 3.93); collaboration with other professionals (mean score: 3.89) and geographic location (mean score: 3.80).

Table 3: Ranked factors influencing the respondents' choice to work in future between public university and private university.

Public University							
Job Considerations	Weight Score					Weight Score$^{\varepsilon}$	Mean Score(SD)
	1	2	3	4	5		
Working environment	1	0	5	28	58	418	4.54(0.70)
Job security	1	0	7	29	55	413	4.49(0.73)
Professional development	0	0	8	32	52	412	4.48(0.65)
Attractive salary	1	1	11	31	48	400	4.35(0.82)
Advancement opportunities	1	0	9	39	43	399	4.34(0.75)
Benefits	1	3	13	32	43	389	4.23(0.85)
Geographic location	2	5	15	35	35	372	4.04(0.96)
Collaboration with other professionals	2	3	18	36	33	371	4.03(0.94)
Flexible work schedule	2	6	19	28	37	368	4.00(1.04)
Private University							
Job Considerations	Weight Score					Weight Score$^{\varepsilon}$	Mean Score(SD)
	1	2	3	4	5		
Professional development	0	2	10	38	33	351	4.23(0.75)
Working environment	0	3	12	34	34	348	4.19(0.82)
Attractive salary	1	0	17	34	31	343	4.13(0.78)
Job security	0	1	15	40	27	342	4.12(0.74)

Advancement opportunities	0	5	18	32	28	332	4.00(0.90)
Benefits	0	4	23	30	26	327	3.94(0.89)
Flexible work schedule	0	4	23	31	25	326	3.93(0.88)
Collaboration with other professionals	2	4	18	36	23	323	3.89(0.95)
Geographic location	2	3	28	27	23	315	3.80(0.97)
ε- Respondent could choose more than one factors (calculation of weighted score has been explained in method section. Arranged according to descending ranks.							

Respondents' Expected Starting Monthly Salary

The students expected starting monthly salary has been summarized in table 4.0. More than half of the students from public and private universities indicated that their expected starting monthly wages ranges between RM 3000 to RM 4000 (55.5% vs. 62.6%). Less than 5% of the respondents from both public and private universities revealed that a starting monthly salary between RM 2001 to RM 2500 is acceptable (3.3% vs. 2.4%). 13% of public university students and 10.8% of private university's students are expecting a starting monthly salary between RM 2501 to RM 3000. 28.3% of students from public university while 24.1% of students from private university intimated an acceptable starting monthly salary of greater than RM 4001. There was no statistically significant difference observed between students from public and private universities regarding the expected starting monthly salary, p= 0.928.

Table 4: Students' Expected Starting Monthly Salary according to respondents from public university and private university.

Students' Expected Starting Monthly Salary (RM)	Public (n=92)	Private (n=83)	P-value$^{\delta}$
2001-2500	3(3.30%)	2(2.40%)	**0.928**
2501-3000	12(13.00%)	9(10.80%)	
3001-3500	25(27.20%)	26(31.30%)	
3501-4000	26(28.30%)	26(31.30%)	
4001-4500	17(18.50%)	11(13.30%)	
4501-5000	2(2.20%)	1(1.20%)	
>5000	7(7.60%)	8(9.60%)	
δ- Mann-Whitney-U test			

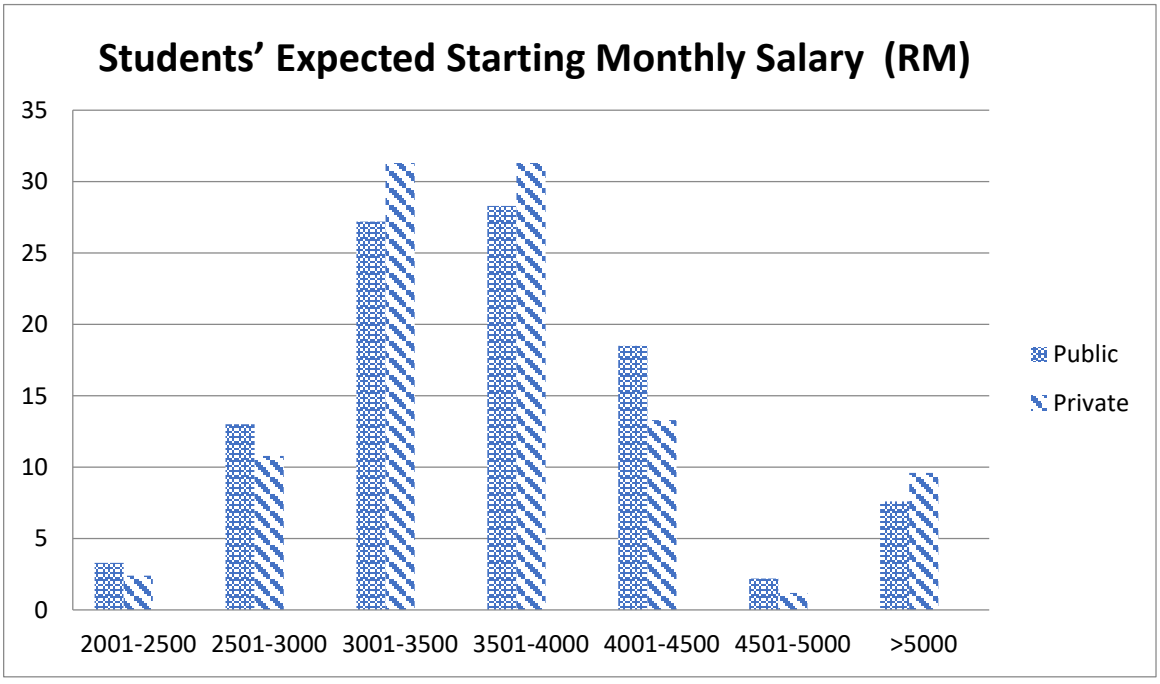

Figure 2: Expected starting monthly salary for final year Bachelor of Pharmacy students upon graduation from public and private universities.

DISCUSSION

Study population characteristics

A significant divergence was observed between students from public and private universities in term of ethnicity and scholarship recipients. This study revealed that nearly three quarter of the students from both public and private universities were female. This finding is somehow similar to the findings reported by other studies [10,13,24]. The female students continued to be dominant in the undergraduate pharmacy course. Notably this study found that the ratio of female: male students in the study of pharmacy have been increased from 3:1 in 2010 to 4: 1 in 2020.

In Malaysia, traditionally most Malay students prefer to study in public universities while the majority of Chinese will fill up seats in the private universities for two reasons: increased competition for seats in public universities and better socioeconomic backgrounds [24,25]. The similar trend was no longer observed in this study, by which, the Chinese students are currently the majority in both public and private universities (as shown in table 1.0). Hasan *et al*. (2010) reported that greater than 75% of the students in the public universities were Malay and more than 90% of the private students were Chinese [10]. Besides, this study also revealed an increase in representation for the Indian population in the undergraduate pharmacy course in both public and private universities. Hasan *et al*. (2010) reported an average of 2% of Indian students; Jason *et al*. (2017) reported a representation of Indian students by 8.9%; this study observed 9.8% Indian students in public university and 13.3% of Indian students in the private university [10,13]. 93.5% of the students from public university while 100% of students from private university were single or unmarried. The similar trend was reported by Hasan *et al*. (2010) [10].

Future career preferences for final year Bachelor of Pharmacy students

Pharmacy graduates in Malaysia are required to undergo one year of compulsory pre-registration training before registering as a pharmacist with the Pharmacy Board of Malaysia. Beginning from year 2012, an amendment was made to the Registration of Pharmacist Act (1951) by which there was a liberalization of training sites for fresh graduate pharmacy students [4]. In agreement with the findings of Hasan *et al*. (2010), government hospitals remained to be the most preferred choice among public and private university students (80% vs. 60%) despite the liberalization of pharmacy training in the country [10]. To work in the private hospital was the option of choice for graduating students from public university (33.7%) while chain community pharmacy was the second preferred choice for students from private university (27.7%). The preferred third option for public and private university's students was chain community pharmacy and pharmaceutical industries respectively (22.8% and 21.7%). This study findings were in parallel to findings reported by Hasan *et al*. (2010) but contradicted with observations by Fatah *et al*. (1998). Fatah *et al*. (1998) disclosed that Independent community pharmacy (34.8%) was the preferred option for graduating students as the future career and followed by chain community pharmacy (27.5%), government hospital (17.4%), private hospital (11.6%) and pharmaceutical industry (5.8%) [9]. The discrepancies between findings from this study as compared to Fatah *et al*. (1998) is the number of independent pharmacies in Malaysia has been mushrooming from less than 1000 community pharmacies to around 3000 community pharmacies in the country and the pay scales as well as career prospects in public hospital at time before year 2005 was not attractive [9,26,27]. The revision of pharmacist's salaries and its career pathways in public hospitals by the Ministry of Health Malaysia since 2005 has made it the preferred career choice for pharmacy graduates from both public and private universities in Malaysia. This study found out that ways back from 1998 till 2020, clinical research and academia remained the least popular career choices for graduating pharmacy students in Malaysia [9,13,19]. This finding highlights the needs to inculcate research culture into pharmacy students from the time they joined the course. Approximately 2% of students from both public and private universities revealed that they wish to venture into areas non-related to pharmacy as their career option upon graduation. This may be due to the current scenarios faced by newly graduated pharmacists in Malaysia by which there is a reduction in salary for junior pharmacists, long waiting time to get enrol into the pre-registration training program (due to remarkable growth in the number of pharmacy graduates) and no dispensing right for pharmacists till now [28].

Ranked factors influencing the respondents' choice to work in future. In terms of job selection, majority of the students in our study considered factors such as professional development, advancement opportunities, working environment, job security, and attractive salaries. Similarly, these factors had been rated important in other studies [5,10,18]. Hasan *et al*. (2010) revealed that in Malaysia salary and benefits were rated the highest among the public university pharmacy students, while salary and geographical locations were rated the highest among the private university pharmacy students [10]. Unlike the responses obtained in the study by Silverthorne *et al*. (2003), previous work experience, and the Clinical Pharmacy Practice (CPP) course were the top-ranked factors influencing students' career decisions [5]. There was no significant difference observed between students from public university and private university in this study. Working environment, job security, opportunity in professional development and attractive salary are the main concerns for graduating pharmacy students. The findings of this study were paralleled with findings reported by Hasan *et al*. (2010) [10] and Jason *et al*. (2017) 13.

Students' Expected Starting Monthly Salary

To the best of our knowledge, there was no studies carried out to assess Malaysian graduating pharmacy students' expectation to the starting monthly salary. This study revealed that there was no difference in terms of expected starting monthly salary for students from both public and private universities. The acceptable initiating monthly wages are between RM 3001 to RM 4000. This observation explained the main reason that public hospital remained the preferred future career option [29]. This finding shall be set as a general guide to the employers or policy makers that RM 3000 per month was the expected starting salary for the majority of pharmacy graduates in Malaysia.

CONCLUSION

This study provides timely insights on graduating pharmacy students preferred future career option, factors affecting their choices and their expected starting salary upon graduation in both public and private universities. The most and least preferred career options for students from both public and private universities are public hospital and clinical research respectively. Students from both public and private universities ranked the working environment, job security, opportunity in professional development and attractive salary as the most remarkable influencing factors in selecting a future career. The acceptable starting monthly salaries by students from both public and private universities range between RM 3001 to RM 4000.

DECLARATIONS

The authors declare that they have no conflict of interest to disclose.

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