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Predictors and factors associated with academic career decision-making among pharmacy students

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Abstract

Objective: In this study, we investigated the predictors and factors associated with pharmacy students' academic career as their future career option.

Methods: A sample of undergraduate pharmacy students studying in their final year was chosen as educational experiences may influence their career choice, and they would have gained more experiences than their juniors. A total of 135 students from one of the private universities in Malaysia participated in this study.

Results: "Interest in teaching' with standardised coefficient Beta value of 0.356 was the best predictor for the students accepting academia. 'Minimal patient contact' with standardised coefficient Beta value of 0.573 was the best predictor for students rejecting academia.

Discussion: The students who were interested in teaching was minimal. Given the challenging nature of an academic career, there is a need to train more pharmacy academics.

Keywords: *Pharmacy career, Pharmacy teaching, Malaysian academics, Malaysian students*

Introduction

University education is an opportunity for students to acquire up-to-date knowledge as well as the skills, knowledge, and capacity for independent thinking. Although these qualifications open doors for employment for undergraduates, career competencies and lifelong learning skills have a major influence in constructing their career choices (Mittendorff *et al*., 2011). Graduation is the jumping block for undergraduate students to move to their preferred career. In Pharmacy, career opportunities for pharmacy graduates have expanded as pharmacy practice has advanced, and new graduates can choose their career from a variety of professional settings. Pharmacy students' perception on their readiness and skills are important aspects for any new applications in healthcare education (Rajiah *et al*., 2016). Pharmacy students' undergraduate curriculum and pharmacy students' experiences in their final year can have a great impact on their decisions (Willis *et al*., 2009).

Malaysia, a fast growing, developing country has high demand for pharmacists (Hassali *et al*., 2016). The basic degree in pharmacy is the Bachelor of Pharmacy, earned by completing a four-year full-time programme. With the increase in the number of pharmacy schools in Malaysia to 20 in 2016 compared with only one in 1996, academic pharmacy in Malaysia is currently facing an unparalleled manpower shortage (Calabretto *et al*., 2005; Hawthorne & Anderson, 2009). The increase in the number of pharmacy schools has given rise to several challenges, including the impact on manpower and the maintenance of the quality of education. Although the pool of applicants for the teaching positions remains stable, the universities are faced with the challenge of providing a quality education to the increasing number of students.

Against this background, choosing a career path in the academic pharmacy profession is an important decision for undergraduate pharmacy students. At the undergraduate level, it is a multi-criteria decision making problem and it is a crucial and anxious situation in a student's professional life (Rajiah & Saravanan, 2014). The earlier studies on career making decision revealed a need for empirical studies investigating the hypothesised relationship between individuals' coping with the decisional tasks during a career decision-making process. A few studies have examined the decisions of graduating pharmacy students and pharmacists finishing the preregistration period relating to the branch of the profession in which they will practise (Clark, 2010; Asiri, 2011).

To identify the current pharmacy students' interest in an academic career, it is necessary to understand their perception of their career choice (Savill, 2000). In order to develop a model for understanding capacity in academic pharmacy, it is necessary to first explore in detail what factors influence the decision to choose a career in academic pharmacy. This research was done to evaluate the predictors and factors associated with pharmacy students' academic career as their future career

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option. The hypothesis of this research was that there would be a significant influence of factors involved in considering academia as a career or not.

In this study, the authors investigated the predictors and factors associated with pharmacy students' academic career as their future career option.

Methodology

Study participants

A sample of undergraduate pharmacy students studying in their final year was chosen as educational experiences may influence their career choice, and they would have gained more experiences than their juniors. A total of 135 students from one of the private universities in Malaysia participated in this study.

Questionnaire and validation

A questionnaire was developed after a detailed review of relevant literature after which the questions were shortlisted to be included in the final questionnaire (Savill, 2000; Clark, 2010). The questionnaire consisted of five sections. It was written in English, which is the language of instruction in Malaysian universities. The questionnaire was formatted as a paper-based survey and was divided into three sections. The first section was about sociodemographic and background characteristics of the participants. The second part evaluated the reasons for selecting academia. The third part included statements of reasons for rejecting academia. The first version of the questionnaire was then referred to subject experts for content validity. The recommended modifications were made to the questionnaire before directing it to a small sample of twenty students for face validity. The reliability coefficient of the questionnaire was calculated using Statistical Package for Social Sciences (SPSS, version 20 for windows, IBM Corporation, Armonk, New York, USA). The Cronbach's alpha value of 0.78 was computed. The responses of the pilot study were not counted in the final analysis.

Study procedure

After obtaining approval from the ethics committee for this research, the survey questionnaire was distributed to all final year pharmacy students. After describing the aims of this study, a written consent form was given to the students who were willing to participate. Furthermore, the participation of students in this study was voluntary, and they were informed that completion and submission of the questionnaire along with the consent form would be taken as their consent to participate in this study. A high level of confidentiality and anonymity was maintained throughout the study.

Statistical analysis

Data were analysed by using SPSS v.20. Descriptive analyses were employed to express the data as frequencies and percentages. A *chi*-square goodness of fit test was done to test whether the observed proportions for a categorical variable differ from hypothesised proportions. In order to examine the relationship between the variables, a Spearman Rho test was employed. The absolute value 0.25 or above with *p*-value of less than 0.05 was considered as statistically significant at 95% confidence level.

Results

Overall, the student survey had a 93% return rate, with 135 responses. The demographic information for the student respondents is listed in Table I. Female students (n=87) constituted more than male (n=48) students. The majority of the respondents (223, 64.5%) were in the age group of 21-23. Most of the students were Chinese ethnic.

Table I: Respondent demographics

Demography	Frequency (n)	Percentage (%)
Gender		
Female	87	64.4
Male	48	35.5
Age (years)		
21-23	124	91.9
24-26	9	6.7
27-29	2	1.5
Ethnicity		
Malay	12	8.9
Chinese	104	77.0
Indian	18	13.3
Other	1	0.7

About half of the respondents (51.1%, n=69) mentioned that their parents did not influence their career decisions and 40.7% (n=55) of the respondents stated that their pharmacy lecturers had discussed academia as a potential career path with them. These discussions were student-initiated, rather than academic staff initiated. More than half of the total respondents (52.6%, n=71) planned to attain a postgraduate degree. Among those who planned for postgraduate degrees, 30.37% (n=22) preferred to do a postgraduate degree in marketing and business administration, while the remainder of the students were willing to do any postgraduate degree. Only those respondents who accepted academia as their preferred career option planned to obtain a specific postgraduate "degree in pharmacy" before entering into their career. Of those choosing academia as their preferred career or one of the options, salary was not a factor of 69.8% (n=94) of their selection. A vast majority of them (97.7%, n=132) had not been influenced by their previous work experience, media and other advisors to pursue academia as a career.

Students were asked whether they would accept or reject academia as their career choice and, for those accepting, also to indicate whether academia was their preferred career option. Only 43 out of 135 students accepted academia as a potential career. Among these 43 students 37.2% (n=16) considered pursuing academia as a full-time career, 41.9% (n=18) considered it as a part-time career, while 18.6% (n=7) were unsure and 2.3% (n=1) considered academia as a part-time position, (n=1).

Among the 43 students who accepted academia as a career option, the three main reasons for selecting academia were for learning purposes (63.5%, n=33), sharing knowledge with students (51.2%, n=22), and interest in teaching (58.1%, n=25). The details of the results were mentioned in Table II.

Table II: Students' reasons for accepting academia (n=43)

Reasons	Yes n (%)	No n (%)	*p*-value
Learning purposes	33 (63.5%)	10 (36.5%)	0.02*
Interest in sharing knowledge with future students	22 (51.2%)	21 (48.8%)	0.01*
Interest in teaching responsibilities	25 (58.1%)	18 (41.9%)	0.02*
Work-life balance	28 (65.1%)	15 (34.9%)	0.04*
Salary	30 (69.8%)	13 (30.2%)	0.41
Interest in public speaking	8 (18.6%)	35 (81.4%)	0.12
Interest research/grant writing/ scholarship	6 (14.0%)	37 (86.0%)	0.34
Influence of formal information regarding academia obtained via the pharmacy curriculum	4 (9.3%)	39 (90.7%)	0.45
Minimal patient contact	2 (4.7%)	41 (95.3%)	0.57
College of Pharmacy Faculty Discussions	1 (2.3%)	42 (97.7%)	0.32
Volunteer Preceptors Discussions	1 (2.3%)	42 (97.7%)	0.25
Influence of media/newspaper/TV	1 (2.3%)	42 (97.7%)	0.43
Influence of informal information regarding academia obtained via shadowing/advisors/non-faculty mentors	1 (2.3%)	42 (97.7%)	0.28
Influence of past work experiences	1 (2.3%)	42 (97.7%)	0.37

******Chi*-square goodness of fit test $p<0.05$

Out of 135 students, 92 students rejected academia as their preferred career option. Of these 92 students who rejected academia as a career, 23.7% (n=22) of them planned to be involve in community-based practice, while 17.7% (n=16) planned to practise in the hospital setting. The top three reasons why the participants did not plan to pursue academic pharmacy were salary (68.9%, n=63), excessive demand for research and related writing (64.8%, n=59), and minimal patient contact (54.1%, n=50). One fourth of the study population who rejected an academic career mentioned work-life balance as one of the reasons for not selecting academia. Interestingly, more than 98% (n=91) of the respondent mentioned that they were not scared of teaching responsibilities and knew that the academic jobs are available to choose. They were ready to do voluntary faculty discussions. Only 2.5% (n=3) of the respondents mentioned public speaking as being one of the barriers. The details are mentioned in Table III.

Table III: Students' reasons for rejecting academia

Reasons	Yes n (%)	No n (%)	*p*-value*
Minimal patient contact	50 (54.1%)	42 (45.9%)	0.03*
Excessive research/grant writing/ responsibilities/ scholarship	59 (64.8%)	33 (35.2%)	0.01*
Salary	63 (68.9%)	29 (31.1%)	0.02*
Work-life balance	25 (27.0%)	67 (73.0%)	0.37
Interested in community-based practice	24 (26.2%)	68 (73.8%)	0.56
Interested to work in the hospital setting	18 (19.7%)	74 (80.3%)	0.42
Excessive teaching responsibilities	17 (18.0%)	75 (82.0%)	0.23
Significant public speaking phobia	12 (12.3%)	82 (87.7%)	0.38
Other reasons	8 (8.2%)	84 (91.8%)	0.16
Discussion with faculty- initiated by students	5 (4.1%)	87 (95.9%)	0.23
Influence of past work experiences	4 (3.3%)	88 (96.7%)	0.43
Scarce public speaking in academia (in the absence of public speaking phobia)	3 (2.5%)	89 (97.5%)	0.29
Volunteer Faculty Discussions	2 (1.6%)	90 (98.4%)	031
Didn't know academic careers existed	2 (1.6%)	90 (98.4%)	0.38
Scarce teaching responsibilities	1 (0.8%)	91 (99.2%)	0.42

******Chi*-square goodness of fit test $p<0.05$

Before conducting multiple regression, the relationship among the independent variables were checked to rule out multicollinearity. Visual examination using scatterplots followed by correlation analysis were done. There were no significant corrections existed between the independent variables.

Correlation analysis was conducted to examine the relationship between reasons for students accepting academia and the top five predictor variables (Learning purposes, Interest in sharing knowledge with future students, Interest in teaching, Work-life balance, Salary). The remaining variables have not been included in regression as they were less than five as the expected value for each cell was ten by *chi*-square goodness of fit test. Table IV summaries the multiple regression analysis

Table IV: Independent variables correlations, multiple regression results

	Learning purposes	Interest in sharing knowledge with future students	Interest in teaching	Work-life balance	Salary	Reason for accepting academia	b	Standard error	Beta
Learning purposes	1	-	-	-	-	-	0.324	0.023	0.356***
Interest in sharing knowledge with future students	0.32	1	-	-	-	-	0.283	0.035	0.307**
Interest in teaching	0.14	0.59*	1	-	-	-	0.294	0.221	0.356
Work-life balance	0.42	0.24	0.38	1	-	-	-	-	-
Salary	0.35	0.36	0.27	0.19	1	-	-	-	-
Reason for accepting academia	0.61**	0.58*	0.83**	0.31	0.38	1	-	-	-

*p<0.05, **p<0.01, ***p<0.001

results. The independent variables (Learning purposes, Interest in sharing knowledge with future students, Interest in teaching) significantly correlated with the dependent variable (reason for accepting academia) while two independent variables (Work-life balance, Salary) were not correlated. There was a strong positive correlation between 'Interest in teaching' and 'reason for accepting academia' r (41) = 0.83, p<0.01. This indicates that when the students' interest in teaching is high, their reason for accepting academia is also high. There was a moderate positive correlation between 'Learning purposes' and 'reason for accepting academia' r (41) = 0.61, p<0.01. This indicates that when the students' interest in learning is high, their reason for accepting academia is also high. There was a moderate positive correlation between students' interest in sharing knowledge with future students and 'reason for accepting academia' r (41) = 0.58, p<0.05. This indicates that when the students' interest in sharing knowledge with future students is high, their reason for accepting academia is also high. But there was no correlation between 'Work-life balance', and 'reason for accepting academia' r (41) = 0.35, p=0.31 as well as 'Salary' and 'reason for accepting academia' r (41) = 0.45, p=0.38. Hence these variables were not included in multiple regression.

The stepwise multiple regression with three potential predictors were analysed. Only two variables (Interest in teaching and Learning purposes) were significantly affecting the reason for accepting academia. In model 1, only with 'Interest in teaching' variable, 56.5% of the reason for accepting academia is explained F (1, 6.312) = 85.61, R^2 = .565, p<.004. In model 2, 'Interest in teaching' along with 'Learning purposes' were the significant predictors with F (2, 5.229) = 70.21, R^2 = .741, p<.001. Model 2 was selected in this study as the R2 value was higher than (74.1% explained variance) model 1. In model 2, there was further increase in reason for accepting academia with significant R2 change of 17.6% variance. The non-significant contributor (Interest in sharing knowledge with future students) was excluded automatically by the SPSS. Outlier was investigated using Mahalanobis Distance which is 8.32 and it is within the limit.

When individual coefficient was analysed to know the strongest predictor, 'Interest in teaching' with standardised coefficient Beta value of .356 was the best predictor. When analysed for the shared and unique contribution of the predictors, 'Interest in teaching' has unique (.612)2 = 37.4%, shared (.623)2 = 38.8% to the dependent variable (reason for accepting academia). 'Learning purposes' has unique (.583)2 =33.9%, shared (.592)2 = 35% contribution to the dependent variable (reason for accepting academia).

Table V summarises the multiple regression analysis results. The independent variables (Minimal patient contact, Excessive research/grant writing/responsibilities/ scholarship) significantly correlated with the dependent variable (reason for rejecting academia) while the independent variable (Salary) was not correlated. There was a strong positive correlation between 'Minimal patient contact' and 'reason for accepting academia' r (89) = 0.75, p<0.01. This indicates that as there is minimal patient contact in academia, the reason for rejecting academia is high. There was a moderate positive correlation between 'Excessive research/grant writing/ responsibilities/scholarship' and 'reason for rejecting academia' r (89) = 0.59, p<0.01. This indicates that as there is excessive research/grant writing/responsibilities/ scholarship in academia, the reason for rejecting academia is also high. But there was no correlation between 'Salary', and 'reason for rejecting academia' r (89) = 0.28, p=0.25. Hence this variable was not included in multiple regression.

The stepwise multiple regression with two potential predictors were analysed. Both the variables (Minimal patient contact, Excessive research/grant writing/ responsibilities/scholarship) were significantly affecting the reason for rejecting academia. In model 1, it was explained that the variable 'Minimal patient contact', 66.5% was the reason for accepting academia F (1, 5.342) = 68.21, R^2 = .665, p<.003. In model 2, 'Minimal patient contact' along with 'Excessive research/grant writing/ responsibilities/scholarship' were the significant predictors with F (2, 4. 954) = 65.28, R^2 = .790, p<.002. Model 2 was selected in this study as the R2 value was

Table V: Independent variables correlations, multiple regression results

	Minimal patient contact	Excessive research/grant writing/responsibilities/ scholarship	Salary	Reason for rejecting academia	b	Standard error	Beta
Minimal patient contact	1	-	-	-	0.424	0.013	0.573***
Excessive research/grant writing/ responsibilities/ scholarship	0.42	1	-	-	0.383	0.025	0.423***
Salary	0.25	0.16	1	-	-	-	-
Reason for rejecting academia	0.75**	0.59**	0.28	1	-	-	-

*p<.05, **p<0.01, ***p<0.001

higher than (79% explained variance) the one in model 1. In model 2, there was further increase in reason for rejecting academia with significant R2 change of 12.5% variance.

When individual coefficient was analysed to know the strongest predictor, 'Minimal patient contact' with standardised coefficient Beta value of .573 was the best predictor. When analysed for the shared and unique contribution of the predictors, 'Minimal patient contact' has unique (.514)2 = 26.4%, shared (.547)2 = 29.9% contribution to the dependent variable (reason for rejecting academia). 'Excessive research/grant writing/ responsibilities/scholarship' has unique (.463)2 =21.4%, shared (.497)2 = 24.7% contribution to the dependent variable (reason for accepting academia).

Discussion

The results of the study suggested that undergraduate pharmacy students have definite views about the most and least appealing aspects of academic pharmacy. A higher proportion of female students than male students in the study population showed that there is a sex imbalance among students studying pharmacy at the university (Jamshed, 2014).

Only 2.2% of students chose academia, which is lower than that reported by Hasan *et al*. in 2010. This result showed that there is a steady decrease in interest among pharmacy students to join in academics. Importantly, salary was among the top three reasons for rejecting academia and one of the greatest factors influencing decisions to work in community pharmacy over academia (Didonato *et al*., 2012) This may be because, community pharmacies are now frequently being visited by customers/patients (Rajiah & Ving, 2014). Selection of salary as a top factor may suggest that pharmacists are seeking financial stability, particularly after an extensive education that may have left them with significant amounts of debt (Asiri, 2011). Klemencic (2013) reported that salary in the general academic sector has not kept up with inflation or with incomes for similarly qualified professionals, and this situation will only deteriorate with time. This may be the reason why students stated salary as the main reason for rejecting academia.

The percentage of respondents who considered academia as a full-time career option is less than those who have opted to be part-timers. The contribution by full-time faculty, as required by pharmacy schools, often required more hours of services than part-time faculty. Their decision to seek employment outside academia, might at least be partially influenced by the number of hours they should spend in the academic environment.

When contemplating a career, work environment was stated as one of the important factors taken into consideration (Savage *et al*., 2009; Roberts *et al*., 2012). Hence, the academic environment, with the lack of patients, is considered unfavourable. The respondents of this study stated minimal patient contact as one of the top reasons for rejecting academia. With advances in the pharmacy profession in Malaysia to focus more on patient-centred care, the students might consider this factor as one of the most influential factors in their decision on career option. Generally, students feel prepared to provide clinical pharmacy services as they receive sufficient training during their undergraduate study and hospital attachments.

White *et al*. (2014) reported that notions of the academic environment may deter interest in academic pharmacy. Shakeel *et al*. (2013) observed that most students were influenced by their internships as well as their hospital and pharmaceutical industry attachments, leading to the selection of industrial pharmacy or hospital pharmacy as their career. Baia & Strang (2012) reported that the students had misconceptions or lack of knowledge about academic pharmacy prior to the commencement of an elective course on teaching and learning. They have also reported that students only get a glimpse of the nature of academic pharmacy through lectures and most of the observations and experiences made as a student do not do the profession justice. In academia, there is a lesser opportunity to be involved in the development and/or expansion of new patient care service compared with the clinical practice. Hence, students might think that academia is not a better option to advance their clinical pharmacy skills.

The next reason they mentioned to reject academia was the excessive demand of writing research related documents. Similar to the present study, several studies from other countries have determined excessive grant writing ("publish or perish" concept) as the major

reasons why students reject academic careers (Willis *et al*., 2008; White *et al*., 2014). Writing research proposals and grant applications are not part of the undergraduate student's repertoire in their curriculum. Pharmacists who possess knowledge in clinical pharmacotherapy and research are dynamic in their practice as clinical pharmacists (Cocolas, 1989). Irrespective of their participation in a research project during their undergraduate programme, they are unlikely to develop the research competencies necessary to complete high-quality research (Vouri *et al*., 2015).

Interestingly, many of the respondents did not consider public speaking to be one of the factors to select or reject academia. Feeling anxious about speaking in public is a common experience for many individuals. The result reflected that the student population had no such feeling. However, a report from Baia & Strang mentioned that students generally lack confidence or hate public speaking, which may contribute to the failure to attract students to an academic career (Baia, & Strang, 2012).

Globally, around 50% of faculty positions were unfilled due to a scarcity of qualified applicants (Eiland *et al*., 2010). Although much emphasis has been placed on pursuing postgraduate education globally, only a minority of respondents mentioned that they would opt for postgraduate studies. This might lead to an exacerbation of faculty shortages or under-qualified applicants. This could be a potential disadvantage, as their viewpoints, attitudes, inclinations and even career routes may not alter with time (Hassell, 2006; Brazeau *et al*., 2009). However, students who had chosen academia as their preferred career were determined to complete their Masters degree before entering the profession; this indicates that at least a few students still show interest towards academia though the number is trivial.

A passion towards academia among students can be inculcated through the university curriculum and the academicians. Motivation for pursuing academia include moulding the future of pharmacy, reflective effort and flexibility, connecting with and mentoring students' uniqueness in the academic environment, autonomy and professional growth opportunities (Draugalis *et al*., 2006; Sheaffer *et al*., 2008). Introduction of academic aspects as electives may be a relatively new technique that can be tried and tested (Calabretto *et al*., 2005; Hawthorne & Anderson, 2009). Baia & Strang (2012) found that 40% of students were contemplating academic pharmacy as a career after completing an academic elective course. Previous reports suggested that students were more likely to be interested in academia as a career when influenced by an academic mentor (Borges *et al*., 2010; Greenberg *et al*., 2013; Mathew & Rajiah, 2014). The influence of a role model may impact decision making. In previous studies, lack of mentorship was felt to impact negatively on research productivity and few official mentorship programmes have been executed and assessed. In an effort to improve academia, faculty development initiatives to enhance mentoring skills should be developed. Mentorship is recognised by administrators in the universities in Malaysia and appropriate training is given. Hence, further training on how to be a role model for the students should be considered. Techniques such as the ask-educate-ask approach and the teach-back method (Sullivan *et al*., 2009) together with motivation may help students. Career advising by a mentor could include formal programmes that explore academic pharmacy as a career path using panels of pharmacists, shadowing, and other methods that expose students to academic pharmacy.

Fouad *et al*. (2006) investigated the need for awareness and the use of counselling services among students and found that students showed counselling needs in terms of career decision making and on issues related to stress caused by this stage. Therefore, career counselling is an educational construct where the individual is supported in knowing oneself and then uses this information to become useful and effective inside the society to which one belongs.

The majority of the colleges of pharmacy were adopting a clinically-oriented type of pharmacy education (Yousif *et al*., 2014). Teaching electives (in basic and clinical pharmacy) could be offered throughout the training and similar opportunities could be offered to provide experience in research and administration, so that over the course of their training, students would complete at least one elective in each area.

The purpose of this article is to serve as a source of the basic information necessary to consider and then seek out opportunities to learn more about academic positions. A minority of pharmacy students indicated academic pharmacy as a career option with only a tiny number stating this as their preferred career. We consider these findings have implications for career advising and curriculum revision. A determination to learn, sharing knowledge with students and interest in teaching being the main factors in accepting academic career by students.

Given the challenging nature of an academic career, and the need to train more pharmacy academics, students who were interested in teaching was minimal. Future approaches to attract students to academia as a career choice needs to be more effective in appealing to students' interests and addressing misunderstandings concerning the activities of a faculty member.

Recommendations for future work

A qualitative approach can be planned as an extension of this study to explore whether pharmacy students know about an academic career prior to embarking on a career in academia and to what extent does this match the reality of an academic career.

Limitations

The data were collected from pharmacy students attending a single private university. Therefore the results of the study may not represent the whole pharmacy student population in Malaysia.

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