Pharmacy Education (2020) 20(1) 273 - 281
https://doi.org/10.46542/pe.2020.201.273281

RESEARCH ARTICLE

Factors influencing choice of career: A comparative study among medical, dental and pharmacy students in a private university in Malaysia

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Keywords
Motivation
Career choice
Pharmacy
Cross-sectional Survey

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Abstract

Background: Students choose their careers based on many factors, which vary for every country. Recent advancements in healthcare systems have made pharmacy one of the most pursued professions. **Aim:** To study the factors that influence students in Malaysia to choose pharmacy as their career. **Methods:** A cross-sectional study was conducted among first-year medicine, dentistry and pharmacy students in a private university in Malaysia. One-way analysis of variance followed by Tukey's post-hoc test was used to determine the factors that influenced students' career choices. **Results:** There were significant differences among medicine, dentistry and pharmacy students in the mean scores for the dimensions 'economic status', 'personal background', and 'work-life balance' which influenced their career choice. **Conclusions:** Economic status, personal background and work-life balance were the factors that significantly influenced students to choose pharmacy compared with students' choice of dentistry and medicine.

Introduction

A continual growth in the global population leads to a great demand for healthcare professionals (Kehrer *et al.*, 2013). Modern day school leavers have many different choices for pursuing a career in healthcare. The selection of the right career plays a vital role in shaping a student's future (DiPadova-Stocks, 2015). Students choose their careers based on many factors and these factors vary for each country (Kazi *et al.*, 2017). Various studies have explored the factors influencing students to study courses in healthcare, with social status, ability to be self- employed, high professional status, helping people, and personal interest being mentioned as the reasons for their choice of profession (Bernabé *et al.*, 2006; Gallagher *et al.*, 2008; Hasan *et al.*, 2010; Karibe *et al.*, 2009; Grayson *et al.*, 2012; Mehmood *et al.*, 2012; Querido *et al.*, 2015; Subait *et al.*, 2017).

There is a general perception among the public that the medical profession has widespread popularity and respect compared to other professions (James *et al.*, 2018). The literature has shown that 'personal fulfilment', 'salary', 'abilities to help patients', 'location of job', 'self-employment', 'interest in science', and 'desire to be useful to society' were the factors that influenced students to choose pharmacy as their career (Bardick *et al.*, 2006; Anderson *et al.*, 2008; Savage *et al.*, 2009; Keshishian *et al.*, 2010; Abdelhadi *et al.*, 2014; Hanna *et al.*, 2016; Alhaddad, 2018). It was also reported that some pharmacy students' progress to healthcare professions outside of pharmacy after completing their studies, citing 'the need for more money' or 'personal reasons' (Ubaka *et al.*, 2013).

The expanded scope of pharmacy practice allows pharmacy graduates to start their professional lives in healthcare organisations in management, regulatory oversight, and pharmacy organisations, in addition to working in clinical and community practice (Taylor *et al*., 2015). Recent advancements in the field of pharmacy (Maharajan *et al*., 2017), the emergence of new treatments and evidence-based practice, make pharmacy an exciting and rewarding career; thus, pharmacy has become one of the most pursued professions in the healthcare field (Royal Pharmaceutical Society, 2018). Moreover, people frequently visit pharmacies and consult pharmacists for advice on health and wellbeing (Bates *et al.*, 2016), with pharmacists being considered the most trusted professionals (Lynas, 2012).

The pharmacy profession is playing a big role in transforming the healthcare system in Malaysia (Hassali *et al*., 2016). The expansion of clinical pharmacy services under the Malaysian Ministry of Health, means hospitals have expanded the role of pharmacists in providing pharmaceutical care to patients (Ministry of Health Malaysia, 2020). Even though most training programmes in Malaysia are for nursing, pharmacy and medicine (World Health Organisation, 2014), transforming the healthcare system in Malaysia is demanding a larger workforce in pharmacy services. It has been reported that a considerable number of students who entered pharmacy mentioned it as a second choice, with medicine or dentistry as their first choice (Keith *et al*., 2006; Sholy & Zeenny, 2013; James *et al*., 2018)

It is essential, therefore, to study the factors that influence students in Malaysia to choose pharmacy as their career. Although many studies have investigated the factors that influenced the career choices of medicine, dentistry and pharmacy students individually, there has been no comparative study among students of medicine, dentistry and pharmacy in Malaysia (Hasan *et al*., 2010;. Anbuselvan *et al*., 2013; Kumar *et al*., 2014). The present study was designed to determine the factors that influenced medical, dental and pharmacy students in making their career choices in Malaysia; the findings may provide an insight for stakeholders in this matter.

Methods

Participants and sample size

A cross-sectional study was conducted in a private university in Malaysia. All first-year students undertaking undergraduate medicine, dentistry and pharmacy courses (a total of 523) were invited to participate in this study. Based on the student population at the International Medical University , the sample size was calculated using the Raosoft calculator with 95% confidence intervals and a 5% margin of error with an expected response distribution of 50%. The minimum sample size required for this study was 65 from dentistry, 153 from medicine and 128 from pharmacy - a total of 346 students.

Study procedure

The study was approved by the International Medical University Joint Committee for Research and Ethics (Ref: BP I-01/12 (43) 2015). Following approval, students were approached to participate in this study during May and October 2015. They were informed about the purpose of the study using the study information sheet and individual verbal or written consent was obtained. The students were assured that their participation was voluntary and that anonymity would be maintained. The names and identity card numbers of participants were excluded to ensure anonymity and confidentiality. Paper questionnaires were distributed to the students between weeks five and eight of their first semester. Drop boxes were kept in the lecture halls. After completing the survey, students dropped their questionnaires into these boxes. The students were asked to ensure that all the items in the questionnaire were answered. The missing data was 5% and those missing values were excluded from the analysis.

Inclusion and exclusion criteria

First-year students undertaking undergraduate medicine, dentistry and pharmacy courses were approached and those who were willing to participate in the study were included. First-year students undertaking other undergraduate courses were excluded from this study.

Study questionnaire

The questionnaire used in this study was based on previous studies (Bernabé *et al*., 2006; Gallagher *et al*., 2008; Hasan *et al*., 2010; Subait *et al*., 2017), which gave the different dimensions that affected the career choices of medical, dental and pharmacy students. The study questionnaire was in English, reflecting the language of instruction in the University, and comprised of 30 statements, which were under six dimensions. Each item contained a statement which required the respondent to indicate the level of agreement on a five-point Likert scale ranging from 0 = Strongly Disagree to 4 = Strongly Agree. The six dimensions were 'Economic status', 'Better

profession', 'Service oriented', 'Interest in science/ research', 'Personal background' and 'Work-life balance'. The questionnaire was assessed for both validity and reliability. Content validity was undertaken by a panel of three subject experts and their opinion on the relevance and significance of the questionnaire was considered, with subsequent adjustments being made to the questionnaire as required. A pilot study was undertaken using 15 students to confirm the reliability of the questionnaire. The internal consistency was estimated by determining the coefficient alpha index with reference to the Cronbach's alpha value using SPSS v.20. The Cronbach's alpha values were as follows: Economic status = 0.73; Better profession = 0.76; Service oriented = 0.78; Interest in science/research = 0.72; Personal background = 0.71; and Work-life balance = 0.72.

Data analysis

Demographic factors were presented as frequencies and percentages. Chi-square goodness of fit test was used to analyse the proportions of medical, dental and pharmacy students who 'Strongly Agreed/Agreed' with the factors (items) which had played roles in their career decision. Means and standard deviations were calculated for the six dimensions. One-way analysis of variance (ANOVA), followed by Tukey's post-hoc test was used to find significant differences within the students' mean scores of six dimensions which had played roles in their career decision. The 'effect size' (Eta squared) test was used to examine the magnitude of the differences in the proportion of the groups (dentistry, medicine and pharmacy). An effect size value of 0.2 was considered as a 'small' effect size, 0.5 represented a 'medium' effect size and 0.8 a 'large' effect size (Sullivan & Feinn, 2012). Homogeneity of variance was tested by using Levene's test of equality of variances. Cronbach's alpha was used to assess the internal consistency of the scales.

Results

A total of 452 students responded, comprising 203 from medicine, 182 from pharmacy and 67 from dentistry. The demographic profiles are presented in Table I. Overall, 452 out of the 523 students responded, making an overall response rate of 86.4%. The response rates from different programmes were as follows: 95% (182/191) from pharmacy; 83% (67/80) from dentistry; 80% (203/252) from medicine. The female:male student ratio was higher in all the programmes. All the dental students chose dentistry as their first choice of career. Among the 203 medical students, medicine was the first choice for 93.6% (n=190) of the students, and dentistry was the first choice for the remaining 6.4% (n=13). Among 182 pharmacy students, pharmacy was the first choice for 87.9% (n=160), medicine was the first choice for 9.9% (n=18) and dentistry was the first choice for 2.2% (n=04). The number of pharmacy students who were on education loans was high compared to medical and dental students. In this study, the family income for pharmacy students was low compared to that of medical and dental students. The range of family income for the majority of pharmacy students was low to medium, whereas that of most of the medical and dental students was medium to high. The percentage of pharmacy students on scholarships was high compared to medical and dental students.

Table I: Frequency distribution of the demographic variables of students

Demographics	Dentistry n (%)	Medicine n (%)	Pharmacy n (%)
Gender			
Male	22 (32.9)	77 (37.9)	70 (38.5)
Female	45 (67.1)	126 (62.1)	112 (61.5)
First choice of specialty			
Yes	67 (100.0)	190 (93.5)	160 (87.9)
No	00 (00.0)	13 (06.5)	22 (12.1)
If no, What was your first choice			
Not applicable	67 (100.0)	190 (93.5)	160 (87.9)
Dentistry	00 (00.0)	13 (06.5)	04 (02.2)
Medicine	00 (00.0)	00 (00.0)	18 (09.9)
Pharmacy	00 (00.0)	00 (00.0)	00 (00.0)
On education loan			
No	55 (82.1)	151 (74.3)	64 (35.1)
Yes	12 (17.9)	52 (25.6)	118 (64.8)
On scholarship			
No	59 (88.1)	168 (82.8)	137 (75.3)
Yes	08 (11.9)	35 (17.2)	45 (24.7)
Family income per month			
Low (<8,000RM*)	00 (00.0)	00 (00.0)	42 (23.2)
Medium (8,000-15,000RM*)	18 (26.9)	76 (37.3)	76 (41.7)
High (>15,000RM*)	49 (73.1)	127 (62.7)	64 (35.1)

*RM- Ringgit Malaysia

Table II: Comparison of the proportion of students agreeing on the factors to choose their career

Dimensions	Dentistry n (%)	Medicine n (%)	Pharmacy n (%)	*p*-value
Economic status				
Better salary	57(85)	180(88)	150(82)	0.142
Financially independent	59(89)	182(89)	122(67)	0.031*
Easy employment	55(82)	164(80)	140(76)	0.236
Make more money	52(77)	170(83)	144(79)	0.473
Prestige	50(74)	172(84)	150(82)	0.158
Better profession				
Job security	57(85)	135(66)	122(67)	0.048*
Better work environment	52(77)	160(78)	138(75)	0.285
Exciting job	50(74)	162(79)	133(73)	0.348
Self-employment	53(79)	148(72)	122(67)	0.022*
No hectic work	56(83)	168(82)	148(81)	0.316
Service oriented				
Treat/help people	50(74)	160(78)	140(76)	0.242
Interact with people	52(77)	154(75)	148(81)	0.187
Help those in need	49(73)	148(72)	144(79)	0.263
Help sick people	51(76)	151(74)	140(76)	0.418
Help the society	53(79)	165(81)	150(82)	0.282
Interest in science/research				
Perform research	44(65)	122(60)	122(67)	0.167
Work scientifically	48(71)	135(66)	144(79)	0.343
Innovation	42(62)	160(78)	140(76)	0.296
Research grants	45(67)	134(66)	122(67)	0.422
Become a research scientist	40(59)	112(55)	108(59)	0.368
Personal background				
Family encouraged	61(91)	192(94)	128(70)	0.021*
Friends encouraged	52(77)	154(75)	122(67)	0.323
Role model's profession	55(82)	140(68)	133(73)	0.295
Read/heard a lot on this profession	51(76)	158(77)	140(76)	0.182
Only few years of education	55(82)	130(64)	150(82)	0.042*
Work-life balance				
Full time or part time	61(91)	179(88)	160(87)	0.124
Time with my family	32(52)	108(53)	150(82)	0.013*
Work as a locum	55(82)	177(87)	138(75)	0.235
Go on vacation	30(51)	105(51)	148(81)	0.012*
Work abroad	50(74)	154(75)	122(67)	0.286

*Statistically significant at 0.05 level

The influential factors are presented in Table II. About 89% (n=60) of dental students were influenced by the factor 'Financially independent' which was significantly higher than the pharmacy students (p=0.03). Other factors such as; 'Easy employment', 'Intention to make money' and 'Prestige' did not show any significant variation among the students. About 85% (n=57) of dental students choose this career for perceived job security; this proportion was significantly higher than that of medical and pharmacy students (p=0.05). About 79% (n=53) of dental students were influenced by the self-employment opportunities, which was significantly higher than pharmacy students (p=0.02). Other factors such as work environment, excitement in the job and hectic work life did not show any significant variation among the students. Factors relating to service of people and society also showed no significant variation; however, the proportions of students agreeing with these factors were equally high among all the students. The factors relating to Interest in science/research showed no significant variation among the students. About 94% (n=192) of medical students and 91% (n=61) of dental students were influenced by their family members, which was significantly higher than the pharmacy students (p=0.02). About 82% (n=150) of pharmacy students were influenced by the years (duration) they have to spend in education, which was significantly higher than the medical and dental students (p=0.04). Work-life balance was another factor influencing pharmacy students significantly (p=0.01) more than medical and dental students; about 82% (n=150) of pharmacy students were influenced to enter this profession so that they can spend time with their family and take a vacation when needed.

The differences among students on the six dimensions are presented in Table III. There was a significant difference among the students for the dimension 'Economic status'. Medical students scored higher than the dental and pharmacy students (F (3,452)=11.82, p=0.04). The effect size was 0.48, revealing that the size of the difference was small. There were no significant differences among the students for the dimensions 'Better profession' (F (3,452) =12.58, p=0.13), 'Service oriented' (F (3,452)=11.45, p=0.15), or 'Interest in science/research' (F (3,452)=12.82, p= 0.13). There was a significant difference among the students in the dimension 'Personal background'. Medical students scored higher than the dental and pharmacy students (F (3,452)=13.25, p=0.05). The effect size was 0.56 which revealed that the size of the difference was medium. There was also a significant difference among the students for the dimension 'Work-life balance'. Pharmacy students scored higher than the dental and medical students (F (3,452)=13.25, p=0.05). The effect size was 0.81 which revealed that the size of the difference was large.

Table III: Comparison of students' mean scores on six dimensions

Dimensions	Students	Mean scores	F ratio, significance	Partial Eta squared
Economic status	Dentistry	18.23	F (3,452)=11.82, *p*=0.041*	
	Medicine	19.46		Med vs Pharm = 0.481
	Pharmacy	15.63		
Better profession	Dentistry	18.45	F (3,452)=12.58, *p*=0.134	
	Medicine	19.21		NA
	Pharmacy	16.98		
Service oriented	Dentistry	14.45	F (3,452)=11.45, *p*=0.152	
	Medicine	15.26		NA
	Pharmacy	16.15		
Interest in science/research	Dentistry	12.24	F (3,452)=12.82, *p*=0.136	
	Medicine	11.82		NA
	Pharmacy	15.43		
Personal background	Dentistry	18.22	F (3,452)=13.25, *p*=0.049*	
	Medicine	19.48		Med vs Pharm = 0.564
	Pharmacy	15.56		
Work-life balance	Dentistry	18.36	F (3,452)=13.37, *p*=0.012*	
	Medicine	19.63		Pharm vs Med = 0.812
	Pharmacy	14.24		

*Statistically significant at 0.05 level

Discussion

This study was conducted among first year medical, dental and pharmacy students at a private university in Malaysia in 2015 to determine the factors which led them to choose their careers. The higher proportion of female participants reflected the higher female:male student ratio in all the healthcare universities in Malaysia (Hasan *et al*., 2010). This result reflects the tendency for females to be significantly more interested in the healthcare profession than males (Gretchen *et al*., 2019).

For all the participants from dental programmes, dentistry was their first choice to study. Previous studies in various countries showed that 'Self-employment', 'Financial independence' (Kapoor *et al*., 2014) and 'Job security' (Brand *et al*., 1996) were significant factors influencing the career choice of dental students. Crossley and Mubarik (2002) reported that dental students chose dentistry because of 'Regular working hours', 'Self-employment' and 'Independence'. Students in Malaysia choose dentistry for various reasons, including a desire to achieve financial stability and work-life balance (Che Musa *et al.*, 2016). In the present study, 'Job security' and 'Self-employment' appeared to be important factors influencing career choice among dental students.

A high percentage of medical students identified medicine as their first choice. In this study, economic status and personal background are the reasons for students to choose medicine. Usually students choose medicine for various reasons such as global recognition, job opportunities abroad, status and respect in society, stability in employment, and job security (Newton *et al*., 1998; Woodward *et al*., 2017).

Although lower than dental (100%) and medical (93.5%) students, pharmacy was the first choice (87.9%) among pharmacy students. The diversity of the pharmacy profession, and the various opportunities in healthcare within Malaysia encourages students to choose pharmacy as a career (Hasan *et al*., 2010; Loo *et al*., 2017). With a two-tier healthcare system consisting of the public and private sectors, and given the growing demand for healthcare services, pharmacists need to take more responsibilities within the healthcare system (Kehrer *et al*., 2013; Christopher, 2018).

In this study, most of the pharmacy students were in receipt of education loans due to their relatively low family incomes. This is a global issue, as graduates are seeking financial stability, particularly after an extensive

education that has left them with significant amounts of debt (Cain *et al*., 2014). Hence, countries such as United States, Canada, United Kingdom and Australia have a 'Student Loan Forgiveness Programme' to relieve them from debt (Federal Student Aid, 2013; Government Digital Service, 2014; Karnezis, 2018; Government of Canada, 2019). The results of the study reflected that a higher proportion of pharmacy students are in receipt of scholarships than that of medical or dental students. Meanwhile, the Malaysian Public Service Department, has announced that all government scholarships from 2016 will be in the form of convertible loans (Balakrishnan, 2016). This means that upon completion of studies, all scholars, who received a scholarship from the Public Service Department are mandated to work in the public sector. If graduates choose to work in government-linked companies (GLCs) or in the private sector, they must pay back 25% or 50% of the scholarship amount respectively (Malaysiakini, 2016).

Unlike dental students, pharmacy students were not influenced by the factors 'Financially independent', 'Job security', or 'Self-employment opportunity'. This may be due to the fact that most pharmacists in Malaysia prefer to work in community pharmacies (Siracuse *et al.*, 2004; Carvajal & Armayor, 2013). Also, pharmacists in community pharmacies have job security and are fully financially independent if they own a pharmacy and are self-employed (Hirschi & Vondracek, 2009: Savage *et al*., 2009).

'Service to people and society' was a key factor among all the medical, dental and pharmacy students, with no significant differences among the three groups; this shows that all three groups of health professional students are focused on serving the public and improving healthcare in society. The results are an indication of students preparedness to be part of a public health workforce. According to Frenk and colleagues (2010) preparing health professionals to be part of the public health workforce of the future is a key element of the quality of education.

There were no significant differences among the three student groups on the importance of 'Interest in science/research' as a factor influencing the choice of career. However, Saunders and Fogarty (2001) reported that career preferences may change over time so that research, as a career opportunity, may attract students in the later years of their course or after graduation. In this study, students did not show interest in research at this point and it may change in the future as the bachelor's degree programmes have a research components in the later semesters.

Pharmacy students were less influenced by their families than medical students for their career choices. This may suggest that pharmacy students' family members might not have a pharmacy background or they do not show a high preference for pharmacy as a career choice. Inequalities in wages and salaries globally (Rao & Indla, 2010; Hanna *et al*., 2016) and in Malaysia (Hasan *et al*., 2010; Manan *et al.,* 2015;) for pharmacists may have discouraged families/parents from preferring pharmacy over medicine and dentistry.

The results of this study also revealed that the duration of the course was one of the factors influencing students' career choice. The pharmacy courses in Malaysia are for four years, whereas both medical and dental courses are five years in duration; thus the one-year difference in course length may have influenced the students' career choices. Earlier studies also found that spending a number of years in the pursuit of a degree delays students' gains attained through a job and income (Rao & Indla, 2010; Pheng *et al*., 2018), with students wanting to start earning as soon as possible. While shorter courses do, however, provide more immediate rewards, these tend to be less substantial in the long term (Rao & Indla, 2010; Pheng *et al.*, 2018).

'Economic status' and 'Personal background' influence the career choices of both medical and pharmacy students (Lefevre *et al*., 2010; Alhomoud *et al*., 2019). Research has shown that people tend to adjust their behaviour and decision-making in an adaptive way, according to environmental circumstances, and decide on career choices that involve lower investment (Hill *et al*., 2008; Gigerenzer & Goldstein, 2011).

Work-life balance improves long-term productivity in any profession, as indicated by previous studies (Rao & Indla, 2010; Pheng *et al.*, 2018). The present study also shows that work-life balance influenced the career choices of the students. Pharmacy students would like to spend more time with their families and be able to take a vacation; these were significantly greater influences for pharmacy students than for medical students. However, choosing one field over the other depends on individual interests, abilities, desired work environment and the lifestyle the individual wants to lead (Omar, 2016).

Strengths and limitations

This study revealed the factors that influenced first year undergraduate students to choose pharmacy over medicine and dentistry as their career at one private

Malaysian university and provides a better picture of student preference for pharmacy compared with the other programmes in this setting.

The findings are limited to the pharmacy students in one private Malaysian university and cannot be extrapolated to a wider population of pharmacy students in Malaysia. The generalisability of the findings should be evaluated in future studies.

Conclusions

Economic status, personal background and work-life balance were the main factors that influenced first-year students to choose pharmacy over the other two professions. Pharmacy students were not influenced differently from medical and dental students by other factors, such as profession, service to society and research. Further research is needed to study students' experience in their professional practice and subsequent achievement in their career.

Acknowledgments

This research was supported by the Institute for Research, Development & Innovation, International Medical University, Malaysia. All the authors acknowledge Professor Brian L. Furman, Emeritus Professor of Pharmacology, Strathclyde Institute of Pharmacy & Biomedical Sciences, Glasgow for his valuable comments on an earlier version of the manuscript and his help in improving the use of English in the manuscript.

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