

Students' views about a pharmacy franchise programmes in Malaysia: A qualitative study

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Abstract

Objectives: Globally, the transitions in pharmacy education are acting as a major challenge to stimulate better outcomes in pharmacy professional programmes. To meet these challenges, some universities in Malaysia and overseas have authorised franchised programmes at various private colleges. This research explored the views of students regarding such franchised pharmacy programmes in Malaysia.

Methods: A theme-based analysis of qualitative data from internet narratives of students' views about franchised programmes in Malaysia was used. The ethical considerations of using internet narratives were approved. Narratives for analysis were obtained by using open-ended questions related to the themes to document the respondents' responses. Narratives were included if they were written in English, Malay or Chinese, they described the students' views and experiences of franchised pharmacy programmes, and they were publicly accessible. Exclusion criteria included narratives given by non-pharmacy students or students' parents. Students' written words were analysed in an iterative analytical process following the principles of narrative analysis, and data collection was stopped when no new information was generated, denoting data saturation. NVivo Version 10 was used to apply three stages of coding – open, axial and selective – in order to identify principal characteristics and themes.

Results: Ten students fulfilled the inclusion criteria and shared their views about the posted statements. The majority mentioned that institutions starting a franchised pharmacy programme must adopt a quality approach rather than being purely profit-driven. The institutions approving such programmes should ensure that an equal standard of quality of teaching is applied by the franchisee as the franchisor so as to maintain the desired learning outcomes.

Conclusion: Students' overall perceptions of franchised pharmacy programmes were mixed. They had strong opinions on measures to ensure the quality of teaching and underpin the achievement of programme educational outcomes.

Keywords: Pharmacy Education, Quality Assessment, Content Analysis, Franchised Programme, Malaysia

Introduction

The professional practice and prowess of clinical pharmacy practitioners in developed nations has been a source of inspiration for pharmacy graduates from Asian regions (Long *et al.*, 2013). Pursuing higher education in developed nations has been a challenge, however, especially for middle-class Malaysians. Certain issues like economic downturn and lack of government scholarships have limited the access of certain groups of students in most of these developing nations. To overcome these barriers, local and international universities have adopted three approaches to providing pharmacy education:

1. International universities have opened campuses in overseas countries teaching the same curriculum as is taught at their home campus. Examples are the University of Nottingham, Monash University and the University of Reading, all of whom have overseas campuses in Malaysia that offer programmes in pharmacy.
2. Universities have adopted credit transfer programmes or the so-called twinning programme. Examples are International Medical University and SEGI University that allow students to study in Malaysia for two years and complete the rest of the programme in other universities in the United Kingdom (UK) or

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Australia (Pharmaceutical Services Divisions, Ministry of Health Malaysia, 2016).

- Universities that receive support and licensing to offer pharmacy programmes that are offered in other universities. Under these franchised programme arrangements, the teaching staff in the franchisor university allow lecturers in the franchisee university to access their syllabus, examinations and lecture materials. Normally a new faculty that has started offering a pharmacy programme would opt for this franchise arrangement because it allows time for their lecturers to design and develop their own syllabus and teaching materials. Examples of franchised programmes in Malaysia are Island College of Technology and UCSI University that offer pharmacy programmes from University of Science Malaysia (Universiti Sains Malaysia), which was the first pharmacy school in Malaysia, established in 1972. Asia Metropolitan University also offers a full four-year franchised programme by the Department of Pharmacy and Applied Science, La Trobe University, Australia.

Essentially, a franchise consists of two parties: the franchisor, who starts and owns the service, and the franchisee who receives certain benefits by providing the service. The term franchising is frequently used to describe the situation where a local college of further education delivers part of a higher education course on behalf of a university. The concept had been practiced in the UK since 1984 (Palmer, 1992; Ecclestone, 2001).

All three of the above strategies take place in pharmacy education in Malaysia and therefore an especially high responsibility rests on the shoulders of the pharmacy boards and higher education departments to ensure the uniformity of curricula and practices across these programmes (Hadi *et al.*, 2011). The Malaysian Education Qualification Agency (MQA) and the Malaysian Pharmacy Board (MPB) are the two main authorities entrusted with monitoring and ensuring the quality of pharmacy education in Malaysia (Pharmacy Board Malaysia, 2007; Malaysian Qualification Agency, 2013).

MQA is the national evaluation and accreditation body that develops and enforces the procedures for programme execution so as to assess total continuous quality improvement and total quality management. The responsibilities of MQA are increased when a franchised programme has to be evaluated. Firstly, the evaluation framework is applied to the main site and then to the franchise site. In the second step, a comparison is made between the two. If the accreditation evaluation is the same for both sites, the franchised unit is considered approved. If there is a poor match between the two sites, however, then a deadline is imposed on the franchised site to improve upon the noted deficiencies. The schedule for the next visit is decided at the quarterly meeting between MQA and MPB. If the franchise unit passes the second-step evaluation then a partial approval to commence a programme is given to the franchise site. Annual visits are made by teams from MQA and MPB to check and assess the compliance with the stipulated guidelines. Final

accreditation is granted on the graduation of the first cohort of students by making the final comparison with the main site.

Accreditation of pharmacy education programmes in Malaysia is based on guidelines issued by the MPB and MQA. One of the main guidelines is 'Guidelines on approval and recognition of a pharmacy programme', which sets out good practice in nine areas relating to the structure and process of higher education (Malaysian Qualification Agency, 2013). Each area has precepts or principles that institutions should demonstrate, together with guidance on how they might meet these precepts. The criteria and standards are applicable at university, faculty/school or department levels and should be used appropriately in the different contexts. The nine areas are: vision, mission and goals; curriculum design and delivery; educational programme; student selection and student support services; teaching/academic staff aspect; educational resources; programme monitoring and review; leadership, governance and administration, and total continuous quality improvement (Malaysian Qualification Agency, 2013). One of the most important areas is curriculum design and teaching-learning methods. In this area, the reviewer from MPB and MQA scrutinises the scientific teaching method, pharmacy curriculum content, ethics and humanities component of the syllabus, management/delivery of the programme as well as the links between the School of Pharmacy and external stakeholders (Pharmacy Board Malaysia, 2007; Malaysian Qualification Agency, 2013).

The criteria and standards for each of the nine areas, as well as the discipline standards, are used as reference points for the development of new programmes or institutions, for institutional self-study (internal academic review) and for external evaluation (external academic review). They are the basis on which judgements are made about the quality of programmes and institutions (Pharmacy Board Malaysia, 2007; Malaysian Qualification Agency, 2013).

From 2010 till 2015, six franchised pharmacy programmes were suspended or discontinued following instructions by MPB. In one of the cases, the main reason for the suspension was inadequate compliance with the internal standards of the franchisor and accreditation frameworks. After suspending the franchised site, students were subjected to great mental stress because they were not sure about the validity of the pharmacy course. Later, the registered students were shifted to the franchisor site in order to continue their pending degree credits. In other cases, the General Pharmaceutical Council of the UK has decided only universities with a branch campus in Malaysia are allowed to offer twinning pharmacy programmes. Thus universities that used to offer the two+two pharmacy programme such as MAHSA University (twinning with School of Pharmacy and Biomolecular Sciences, Liverpool John Moore University); SEGI University (twinning with Faculty of Applied Sciences, Sunderland University), International Medical University (twinning with Strathclyde Institute of Pharmacy & Biomedical Sciences), and Taylor's University (twinning with Welsh School of Pharmacy,

Cardiff University) have to discontinued their twinning pharmacy programme. Furthermore, since 2012, MPB increased the minimum result requirements for SPM (equivalent to Ordinary Level examinations) to B for four subjects, namely Physics, Chemistry, Biology and Mathematics. This new directive guideline created dissatisfaction among students who did not meet such requirements and meant that many students enrolled themselves in overseas universities, such as in Indonesia, that were not bound by this pre-requisite.

In addition to this evaluation process, the local Malaysian universities that have authorised franchised programmes need to constantly monitor the delivery of these programmes to ensure the same quality for students at the franchised site as at the main site. Interestingly, various foreign universities have opened branch campuses in Malaysia. For example, the flagship Educuity Nusajaya education hub situated in southern Malaysia already hosts several offshore international campuses such as the University of Reading, the University of Newcastle, the University of Southampton, and the Netherlands Maritime Institute of Technology.

Currently, data on students' views on franchised pharmacy programmes in Malaysia is limited. Students' views will assist in further assessing and evaluating the programmes and indicate ways of improving them. It is especially useful to seek their perception because prior to their enrolment, the students had done their own programme survey to try to understand the strengths and weaknesses of each programme. The students have experienced the lectures and tutorials, and so their views reflect the actual conditions of the universities.

This analysis seeks to explore student views about franchised pharmacy programmes in Malaysia: their perception on the quality of teaching and the integrity of the university management.

Methods

A theme-based approach was used to evaluate students' views about franchised pharmacy programmes in Malaysia. Open-ended questions related to the themes were used to document the responses. The pharmacy students who were taking franchised pharmacy programmes in Malaysia were invited to join a Facebook group. The invitation to join this Facebook group was made via the pharmacy student societies' Facebook groups. Facebook was used because information provided by individuals on Facebook can be detailed, allowing for analysis of multiple questions. Furthermore, public profiles on Facebook allow naturalistic observation with limited concerns about participant reactivity. Fifty-two people joined the group. The group was further monitored for two weeks for the addition of any new members. After this deadline, an anonymous Google[®] form link, with the open-ended questions below, was pasted in the news feeds to invite students' individual responses. The responses obtained from both the Facebook posts and Google[®] forms were used for

data analysis. Relevant follow-up questions were posted to elicit further information and views from the students who fulfilled the inclusion criteria.

- Question 1: What is your opinion on franchised programmes and overseas pharmacy programmes?
- Question 2: In your opinion, what are the advantages and disadvantages of franchised programmes?
- Question 3: What do you think about the quality of the education provided? What do you think are the reasons for this university offering franchised and overseas degrees?
- Follow-up questions: Why do you think so? What are your course mates' opinions? Can you explain more about this?

The inclusion criteria were students attending franchised pharmacy programmes in Malaysia, narratives written in English, Malay or Chinese, descriptions of students' views and experiences about franchised programmes, and publicly accessible. Exclusion criteria included narratives given by non-pharmacy or graduated students, students' parents, and non-participating members.

Ethical considerations

Ethical approval was obtained from the Academic Registrar's office at the Island College of Technology, Penang. Respondents were assured of anonymity and confidentiality. Permission was also obtained from the online respondents.

Data collection and interpretation

The authors reviewed all responses to avoid any potential bias. Information posted as personal messages or purposely hidden was not explored. Based on the students' responses, themes were generated to portray their overall views about the franchised pharmacy programmes in Malaysia. The respondents' comments were extracted from the group site. Students' written words were analysed in an iterative analytical process following the principles of narrative analysis and further probing questioning was stopped when no new information was generated, denoting data saturation. Three stages of coding - open, axial and selective - were conducted, using NVivo Version 10, to identify characteristics and themes. Independent coding of responses by all authors was undertaken to ensure relevance with the identified theme.

Results

Out of the fifty-two people that joined the Facebook group, fifteen were currently enrolled pharmacy students. We excluded forty-two people that joined the Facebook group: fourteen were high school students that were interested in studying pharmacy, two were students' parents, twenty-one were graduated students, and five

were pharmacy students that did not contribute to any discussion. The ten students who provided detailed responses using the Google[®] form, as well as actively participating in the discussions posted on the Facebook group, were included. The ratio of male (M) to female (F) respondents was 3:7. Two, three and five students were in their second, third and fourth years, respectively, of a four-year Bachelor of Pharmacy and undergraduate-level Masters of Pharmacy franchised programme from two institutions (University of Science Malaysia and Island College of Technology). The students' responses (all responses are written in English language) are discussed below.

Theme 1: Perception of Franchised Pharmacy Programmes

Students provided varied responses about the franchised pharmacy programmes. The majority agreed that these programmes are a good opportunity to obtain a degree from an established university and they are keen to study in the main campus rather than in the franchised campus:

There is no match with the charm and standard of studying at the mother campus in comparison to the franchised campus [S1 (M-2nd year)].

However, some students believed that:

Franchised pharmacy programmes from a well-reputed university is a great opportunity, for a college like ours, only if the college is committed to maintain the same quality standard as the parent site with well-equipped labs and qualified teaching staff [S2 (F 3rd year)].

In addition, some of the students favoured franchised pharmacy programmes at a national level:

It is a good concept; just imagine having one franchiser university and all the franchise colleges throughout the country teaching the same curriculum [S9 (F final year)] I am not against the franchised programmes if they are operated under the strict supervision of the MQA and franchiser site [S6 (M- final year)].

Other students, however, showed total or partial opposition to franchised pharmacy programmes:

I totally disagree with franchised pharmacy programmes; however, a credit transfer programme would be ideal option if adopted [S2 (F 3rd year)]. In my view, franchised pharmacy programmes are an irrelevant approach for knowledge sharing for a professional degree [S1 (M-2nd year)].

I am not against the franchised programme. In my view it is the way through which we can synchronise the curriculum for a professional degree. If curriculum synchronisation is ensured then I am in favour of franchised pharmacy programmes [S4 (M- final year)]. I think this is a good way to provide an opportunity for students to get educated with the curriculum of a well-recognised university [S6 (M- final year)].

Finally, one student emphasised that:

Franchised pharmacy programmes are good, especially if that institute that is quality-conscious. We have

certain examples in Malaysia where an institution has started with a franchised programme and today they have their own pharmacy programmes [S10 (F- 2nd year)].

Theme 2: Quality of Franchised Pharmacy Programmes

Students showed serious concerns regarding the quality of franchised programmes. One student mentioned:

For sure there will be a difference in quality that will result in two categories of students, one graduated from the mother campus and the other from the franchise college. This is awful for a professional degree like pharmacy [S1 (M- 2nd year)].

Even though there is follow up from the franchiser/parent site to keep a check on the quality of the information shared and facilitates provided, students always think that there is some difference between the students at the franchisor campus and at the franchised site [S10 (F- 2nd year)].

In addition to perceived quality differences, some students criticised the way such programmes are managed:

Management of such programmes is the main point that makes the difference; If the programme is managed poorly then no one will favour such franchised programmes [S3 (F- Final year)].

Moreover, students also emphasised the need for a more proactive role from the side of the franchisor campus:

Quality is the main catalyst for the success of such programmes. Responsibility goes back to the parent institution; they should keep a check and balance to monitor the quality of programmes [S4 (M- Final year); S9 (M- Final year)].

A compromise on quality will result in dual standard students, which spoils the image of the college and the franchisor campus as well [S4 (M- Final year)].

But if a franchised programme is poorly supervised and the franchisor sites neglect the quality parameters then such programmes are useless [S4 (M- Final year); S10 (F- 2nd year)].

Theme 3: The motives for offering franchised pharmacy programmes

Most of the students believed that franchisee institutions start pharmacy programmes as an investment venture or a short-cut to attract students by offering the programmes of established universities.

For sure the colleges operating franchised programmes have investment purposes [S5 (F- 2nd year); S7 (M- Final year)].

Most of the private colleges sign franchises/ memorandums of understanding just to attract the students and to make some money [S1 (M- 2nd year)].

I do agree that there is an element of earning profit, which is achieved by admitting the students that would

have not been admitted to the parent university. However, at the end of the day, students at the franchised unit and at the franchiser campus will both get the same degrees [S4 (M- Final year)].

Most of the colleges are operating with a thought that they will cash in on the name of the well-reputed university and students will be attracted to join the college [S2 (F- 3rd year)]. I believe that franchising is a fast-track education business venture whereby the institutions do not need to prepare the programme themselves. They just need to provide the manpower, the infrastructures and facilities properly according to the requirements set [S8 (M- 3rd year)]. At the end it's all about cost-cutting and profit optimisation for both sides: franchisee and franchisor. Franchisors also get financial benefits from the students enrolled every year [S10 (F- 2nd year)].

Discussion

The current study is the first to provide information on the perceptions, quality and motives of offering franchised pharmacy programmes in Malaysia. From the thematic analysis, the students generally rated the franchised pharmacy programmes as a good concept, great opportunity and comparable to the mother school. This is in agreement with the main aim and the general experience of franchised pharmacy programme in other parts of the world (Nijmeijer *et al.*, 2014). This may be due to the fact that most of the franchisee schools in Malaysia complied with the provisions of the MQA and MPB (Pharmacy Board Malaysia, 2007; Malaysian Qualification Agency, 2013). This has led to developments in the field of pharmacy practice: not only a drive to enhance curricula but also to evaluate and assess the programmes. For example, many local universities in Malaysia such as University of Technology MARA, International Medical University, Taylor's University, SEGI University, UCSI University have developed and implemented their own independent undergraduate pharmacy programmes as well as other new programmes such as Bachelor of Pharmaceutical Chemistry, Master of Pharmaceutical Chemistry, Master of Pharmaceutical Technology, Master of Clinical Pharmacy and Master of Pharmacy Practice. Regarding the quality of the franchised pharmacy programmes in Malaysia, the students voiced serious concerns related to the need for constant supervision and monitoring. Their opinion was that when the quality of the programme is compromised, the whole idea of franchised pharmacy programme is defeated, and will eventually produce incompetent pharmacists with poor backgrounds and with consequent drawbacks for patient care. Moreover, the pharmacy profession is still in transition in developing countries. To compensate for these deficiencies, many institutions have adopted a policy of starting franchised pharmacy degree programmes that operate under the coordination of the franchisor institutions. Thus, the franchise unit aims to develop students who can contribute to the care of patients, and to

the profession, by practicing with competence and confidence (Long *et al.*, 2013; Ming *et al.*, 2014), as well as providing students with an environment that helps them to become lifelong learners and improve their ethics to serve the community (ACPE, 2006). In such circumstances, it is essential to ensure that the learning outcomes and strategies adopted to improve the knowledge and skills of students are the same on both sides (Yen *et al.*, 2015). If there is a variation it will result in dual standards on the same programme offered by the same institution. In the past such discrepancies were possible but, in current practice, the concept of quality management in education has diminished the occurrence of such situations. In terms of the motives of offering franchised pharmacy programmes in Malaysia, the majority of the students described the programmes as an investment venture, in addition to providing quality education. It is obvious that most of the franchisors are profit-driven institutions, and similarly funds are needed to provide a quality of pharmacy education comparable to the main school abroad.

Limitations

The study only included students who were taking franchised programmes, so it is not possible to determine if their opinions about programme quality and management are different from those studying at the main franchisor's institution. In order to overcome this limitation, the same study should be conducted at the franchisor's institution. Secondly, the study used a qualitative methodology, so less consideration was given to sample size. Also, issues like fake Facebook profiles, validity of information provided on social media and absence of ethical guidelines associated with using social networking media as a research tool may have affected the findings of the current study.

In addition, as not all students were enrolled in the Facebook group, self-selected respondents may have represented a biased perspective.

Conclusion

The three main themes developed from the qualitative analysis reflect the students' perception of the quality and motives of franchised pharmacy programmes. The students' views on these programmes are varied. They believe that franchised pharmacy programmes provide a new avenue for pharmacist training, but they have concerns about the quality and the business nature of the programme. Their views are useful for assessing and evaluating the programmes and subsequent quality improvement. It is especially useful to seek their perceptions because prior to enrolment the students had done their own programme surveys and understood the strengths and weaknesses of each programme.

Recommendations: It is recommended that all schools of pharmacy should maintain and adhere to the standards

stipulated by the Malaysian Education Qualification Agency and the Malaysian Pharmacy Board. Further studies should target large sample size and utilise other research methodologies such as focus groups, a questionnaire survey or an observational study.

Acknowledgement

The authors would like to thank the ten respondents who participated in the study. This work was partially supported by Academic and Research Assimilation grants: 600-IRMI/DANA 5/3/ARAS (0035/2016). The authors would like to express their gratitude to Ministry of Higher Education and Universiti Teknologi MARA (UiTM), Malaysia for their financial support in this research.

References

- ACPE. (2006). Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree, Chicago, IL, Accreditation Council for Pharmacy Education (online). Available at: http://www.acpe-accredit.org/pdf/ACPE_Revised_PharmD_StandardsAdoptedJan152006.pdf. Accessed 19th January, 2015.
- Aita, V., McIlvain, H., Backer, E., McVea, K. & Crabtree, B. (2005). Patient-centered care and communication in primary care practice: what is involved? *Patient Education and Counseling*, **58**, 296-304.
- Boyd, J.A., McKenzie, C.A. & Holmes, T.J. (1999). Assessment of learning disabilities among a pharmacy student population. *American Journal of Pharmaceutical Education*, **63**, 68-71.
- Ecclestone, K. (2001). 'I know a 2:1 when I see it': Understanding criteria for degree classifications in franchised university programmes. *Journal of Further Higher Education*, **25**, 301-313.
- Hadi, M.A., Long, C.M., Leng, L.W., Lylia, R.R. & Adam, A. (2011). A needs-based curriculum review for diploma in pharmacy programme at a Malaysian university. *Archives of Pharmacy Practice*, **2**, 23.
- Khan, T. (2011). Challenges to pharmacy and pharmacy practice in Pakistan. *Australasian Medical Journal*, **4**, 230.
- Khan, T.M. (2010a). Critical Considerations in Pharmacy Curriculum Development in South Asian and Southeast Asian Developing Nations. *American Journal of Pharmaceutical Education*, **74**, 176g.
- Khan, T.M. (2010b). Glimpse of pharmacy education in Pakistan and current challenges to pharmacy education. *International Journal of Pharmacy Teaching & Practice*, **1**, 5-10.
- Khan, T.M. (2012). Deficiencies in clinical pharmacy curricula in developing Asian nations. *European Journal of Hospital Pharmacy: Science and Practice*.
- Khan, T.M., Anwar, M. & Mueen Ahmed, K.K. (2011). A Perspective for Clinical Pharmacy Curriculum Development and Validation in Asian Developing Nations. *Journal of Young Pharmacists*, **3**, 151-154.
- Long, C.M., Hadi, M.A., Kassab, Y.W., Yap, Y.L. & Lee, W.L. (2013). Does Msc in clinical pharmacy promote a clinical pharmacy career? A qualitative study. The 13th Asian Conference on Clinical Pharmacy, September 13th - 15th, 2013 Haiphong city, Vietnam, 2013. Asian Conference on Clinical Pharmacy.
- Malaysian Qualification Agency [MQA]. (2013). Rating for accreditation of undergraduate pharmacy programme in Malaysia (revised version).
- Ming, L.C., Mei, Y.S., Muhammad, A.M., Hussain, M. & Manan, M.M. (2014). Curriculum review of pharmacoinformatics course for bachelor of pharmacy programme. Taylor's 7th Teaching and Learning Conference 2014 Proceedings - Holistic Education: Enacting Change.
- Palmer, A. (1992). Franchised Degree Teaching What Can Educators Learn From Business? *Journal of Further and Higher Education*, **16**, 77-86.
- Pharmaceutical Services Divisions, Ministry of Health Malaysia. (2016). List of Recognized Pharmacy Degree by Pharmacy Board Malaysia (online). Available at: <http://www.pharmacy.gov.my/v2/en/content/list-recognized-pharmacy-degree-pharmacy-board-malaysia.html>. Accessed 10th January, 2016.
- Pharmacy Board Malaysia. (2007). Guidelines on approval and recognition of a pharmacy programme.
- Roche, V.F. (1991). Assessing the Attributes Which Influence Pharmacy School Selection to Promote Effective Recruiting Strategies. *American Journal of Pharmaceutical Education*, **55**, 322-31.
- Wade, W.E., Cobb III, H.H., Spruill, W.J. & Chisholm, M.A. (1999). Assessment of student performance in an advanced pharmacokinetics course taught by three methods of instructional delivery. *American Journal of Pharmaceutical Education*, **63**, 82-85.
- Yen, W.Y., Fen, N.C., Ming, L.C., Mei, Y.S. & Muhammad, A.M. (2015). Practical tips to facilitate CO:PO mapping and documentation Taylor's 7th Teaching and Learning Conference 2014 Proceedings - Holistic Education: Enacting Change.