

A qualitative study exploring pharmacy education in a Saudi pharmacy school running two entry-level pharmacy programmes

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Abstract

Background: Saudi Arabia has witnessed a period of significant changes in pharmacy education to enable it to keep up with the global education system in developed countries. The College of Pharmacy at King Khalid University (KKU) was established in 2003 in Abha and currently offers two undergraduate pharmacy programmes: a Bachelor's degree in Pharmaceutical Sciences (B.Pharm.) and a Doctor of Pharmacy (Pharm.D.).

Objective: The aim of this research project is to provide an overview of pharmacy education at KKU, focusing on the effects of having two pharmacy programmes at the same college.

Method: A qualitative prospective study design with a purposive sampling technique was utilised to address the study objectives. The study was conducted throughout the Asir region, at King Khalid University and in local hospitals from October 2016 to February 2017.

Results: The study revealed that establishing the Pharm.D. programme at KKU was a result of national and global changes in pharmacy education. Running two programmes has resulted in a surplus of pharmacists in the region, but the limited job opportunities in the private sector has led to an imbalance between supply and demand. Additionally, the increased number of pharmacy students made it difficult to secure training positions and added to the workload of hospital preceptors. Two programmes also increased the workload of academic staff, hence reducing the quality of teaching. Additionally, the B.Pharm. students felt inferior and less valuable than their Pharm.D. colleagues.

Conclusion: The study revealed that the operation of two programmes has several consequences on the institutional level, such as a high workload for academic staff and difficult feelings between the students of the two programmes. It also resulted in a surplus of graduates in a competitive market with limited employment opportunities, creating an imbalance between the supply and demand of pharmaceutical human resources. Phasing out the B.Pharm. programme would be the most suitable decision, based on an evaluation of the academic institution capabilities, number of training sites, and local job market.

Keywords: Pharmacy Education, Saudi Arabia, Undergraduate Pharmacy Programmes, King Khalid University

Introduction

Pharmacy education in Saudi Arabia is a relatively new and developing sector, which has existed for less than a century. Recently, this sector has witnessed a period of significant change to enable it to keep pace with the global education system in developed countries (Anderson *et al.*, 2008; Anderson, 2009; Asiri, 2011).

Pharmacy education in Saudi Arabia started in 1959 with a small College of Pharmacy at King Saud University, Riyadh. The number of pharmacy schools has increased dramatically; there are currently 27 colleges of pharmacy around the country (Al-jedai *et al.*, 2016; Almaghsalah *et al.*, 2018). Over a period of 50 years, pharmacy

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education has transformed from solely offering a Bachelor of Pharmaceutical Sciences (B.Pharm.) to offering the Doctor of Pharmacy (Pharm.D.) and Master's-level degrees (M.Sc.) (Asiri, 2011, Al-jedai *et al.*, 2016). Seventeen schools have solely adopted the Pharm.D. programme, while six schools offer only the B.Pharm.. Four universities have opted to run both the B.Pharm. and the Pharm.D. programmes simultaneously, including King Saud University (KSU), Umm Al-Qura University, Taibah University, and King Khalid University (KKU). Hence, most Saudi universities are moving toward the Pharm.D. curriculum, which indicates that the B.Pharm. degree will eventually be phased out.

The College of Pharmacy at King Khalid University (KKU) was established in 2003 in Abha. The College has five departments: Pharmaceutics, Pharmacology, Pharmacognosy, Pharmaceutical Chemistry and Clinical Pharmacy. At its inception, it offered only the B.Pharm. as its entry-level degree. In response to the national and international trends in pharmacy education, KKU began the Pharm.D. programme in 2010. Currently, it offers both undergraduate pharmacy programmes. The B.Pharm. programme is five years in length, while the Pharm.D. programme is six years long. The pharmacy programmes are delivered in the English language. Both programmes follow the same curriculum in the first three years, but they differ in the fourth and fifth years. In terms of the training period, B.Pharm. students undergo four months of training, while Pharm.D. students undertake one year.

The Bachelor's degree programme trains students in pharmaceutical sciences, after which the graduates will have the necessary experience to move into a related science field or work in various pharmacy fields, such as hospital and community pharmacies, pharmaceutical companies or marketing. The Pharmacy Training Programme consists of three rotations, two mandatory rotations and one elective rotation (KKU, 2018).

The Pharm.D. programme is a professional level degree, covering pharmaceutical sciences with a focus on clinical aspects that will allow graduates to work in hospitals with the medical team. The Pharmacy Training Program, or so-called Advanced Pharmacy Practice Experiences (APPEs), has been designed to provide students with various experiences in clinical pharmacy areas, including hospitals/institutions, community pharmacies, ambulatory care, or acute care/internal medicine. The APPEs consist of eight rotations, with four mandatory rotations and four elective rotations (KKU, 2018).

In Saudi Arabia, the B.Pharm. degree and the Pharm.D. degree are equivalent when it comes to registration as a pharmacist at the Saudi Commission for Health Specialities. Hence, pharmacy schools have the freedom to run either of the two undergraduate pharmacy programmes or both, especially due to the lack of a specific pharmacy education regulatory body, such as the United States (US) Accreditation Council for Pharmacy Education (ACPE). As a result, the pharmacy education system is not standardised around the country.

The aim of this study was to provide an overview of pharmacy education at KKU, with a focus on the effects of having two undergraduate pharmacy programmes. The study highlighted the challenges and advantages, job market preferences, and pharmacy workforce intelligence from three perspectives: academics, pharmacy practice stakeholders, and Pharm.D. and B.Pharm. students. In addition, this study provided data for decision-makers on whether or not to continue operating the two programmes.

Methods

This study had a qualitative prospective study design. The study was conducted in the Asir region between October 2016 and February 2017. Consolidated criteria for reporting qualitative research (COREQ) guidelines were followed in reporting (Tong, Sainsbury & Craig, 2007).

The study participants included six academics who were purposively selected based on their role as policymakers and members of one of the following committees: Quality, Curriculum or Accreditation at KKU College of Pharmacy. Additionally, a snowball sampling technique was used to select six pharmacy practice stakeholders (hospital pharmacists) who are involved in training KKU pharmacy students. A group of ten students in the final year of their programmes were also included. Recruiting participants for the focus groups was through a convenience sample.

A one-to-one interview was used to collect data from the academics and practicing pharmacists, while focus groups were conducted with the students. Interviews with academics and students were conducted face-to-face at the college campus, whereas interviews with practicing pharmacists were undertaken at their workplaces, *i.e.* hospitals and primary healthcare centres around the region. Participants were contacted and received *via* e-mail the study proposal, consent letter and interview guide before the interviews were conducted. They were also informed that their identities would remain anonymous, using A1-A6 to identify the academics, H1-H6 for hospital pharmacists and S1-S10 for students. Detailed topic guides were developed and piloted with both academics and practitioners prior to the interviews.

Interviews with the academics and hospital pharmacists focused on the challenges and advantages of running two undergraduate programmes, job market preferences for either of the programmes, and pharmacy workforce intelligence. The topic guide for students focused on their awareness of the differences between the two programmes, pros and cons of having two programmes and how they were affected by being enrolled in one of the programmes. It was a female researcher conducting the interviews and had previously worked on qualitative studies examining health services in Saudi Arabia.

The interviews and focus groups lasted 30 minutes on average, and were conducted in Arabic. The interviews were tape recorded, transcribed *verbatim*, and then translated into English. To ensure the quality of the translation, three of the interview scripts were double-checked by another English-Arabic bilingual researcher at the KKU College of Pharmacy.

Analysis

A set of draft analytic frameworks was developed, including key themes and sub-themes that emerged from the data, as well as those related to the research questions. Separate frameworks were used for each of the three groups surveyed. Drafts were tested with a small amount of interview data. The final themes were used to code the data, providing a detailed and accessible overview of the data populating each theme and sub-theme from every participant. This data management approach afforded the possibility of exploring the data by both theme and participant type (Ritchie, 2003). Two authors were involved in coding the data and a total of seven themes were identified. To ensure credibility, four participants were asked if the study results represented their views on pharmacy education at KKU and they agreed that they did.

The findings were presented in the form of quotations from the participants' perspectives. To ensure credibility, four participants were asked if the results based on study data represented their views on pharmacy education at KKU and they agreed that they did. Ethics Committee approval for this study was not required, as recommended by the College of Pharmacy Research Committee.

Results

The main findings suggested that there are several influences that affect pharmacy education at KKU. From the thematic analysis, a total of six themes were identified. The results were presented in the form of quotations from the academics, pharmacy practice stakeholders, and students' perspectives.

The thematic analysis of the interviews with academics resulted in a number of themes.

First: 'The pharmacy education programmes at KKU are highly influenced by international trends in pharmacy education.'

Pharmacy education stakeholders agreed that pharmacy education is influenced by international and national trends in pharmacy education, *i.e.*, establishment of the Pharm.D. programme, as well as retaining the B.Pharm. programme. However, according to the International Pharmaceutical Federation's (FIP) model of needs-based pharmacy education, the design of a pharmacy curriculum should consider the local needs of the region

and aim to supply a workforce with the competencies required to provide the services that meet the regional needs (FIP, 2012). The current pharmacy programmes do not appear to meet that criteria.

This finding was extracted from participant quotes, including:

A1: *"The reason for having two programmes was to serve two different pharmacy sectors, hospital pharmacy and pharmaceutical industry."*

A3: *"The reason for establishing [the] Pharm.D. programme was a result of the global changes in education trends."*

A2: *"The reason for opening the Pharm.D. programme at KKU was solely because other universities did, without any evaluation of our capabilities or our weaknesses. Interestingly, the programme started while we did not have any hospital preceptor."*

Second: 'Keeping one programme, the Pharm.D. programme, and phasing out the other would be the way forward.'

The current negative outcomes of running both programmes include a shortage of pharmacy education staff, high workload, and insufficient teaching resources, among others. Therefore, phasing out one programme is likely to resolve these difficulties.

The participant quotes that supported this theme include:

A3: *"We'd rather keep the Pharm.D. programme, but at the moment, the challenge is where they are going to do their training. As you know, we don't have a university hospital, and the capacity of the hospitals in the region is limited."*

A4: *"I personally think that we need to redesign the curriculum and have one programme that services all the sectors."*

A6: *"I believe having two programmes is a transition period before the B.Pharm. programme phases out."*

Third: 'Imbalance between pharmacy workforce supply and demand'

Some participants raised the point that monitoring of the pharmacy workforce could be more structured. The number of pharmacy schools was stable between the 1980s and 1990s. However, in the 2000s, the number of pharmacy colleges started to increase exponentially. At the moment, there are 27 pharmacy colleges in Saudi Arabia. The number of pharmacy graduates has increased accordingly, which might indicate that the production of a pharmacy workforce has exceeded the current demand, resulting in an oversupply. Regular, more detailed profiling of the pharmacy workforce is an essential step to achieving an effective pharmacy workforce plan.

Supporting quotes:

A1: *“I don’t think there are enough job opportunities in [the] Asir region. I’m not talking about hospitals only, it also includes research centres, pharmaceutical industry, etc.”*

A2: *“There aren’t sufficient job opportunities, especially in the Ministry of Health, and the number of graduates definitely cannot [be] employed by the public sector.”*

A3: *“Employment at the public sector is almost impossible; the number of graduates by far exceeded the demand.”*

Fourth: “Underutilisation of the private sector as a major career pathway ”

The private sector pharmacy sites (*i.e.*, pharmacies in private hospitals and community pharmacies) are mainly run by non-Saudi staff. The long working hours, inflexible shifts and low payment compared to the government’s hospital pharmacies has made this sector less attractive for local pharmacists. This has contributed to the on-going demand for, and reliance on expatriate pharmacists. Bearing in mind that the number of local pharmacy graduates is expected to increase, along with the unemployment rate, beginning pharmacists need to be aware that their job opportunities may be in less desirable working environments. This might be the only way to reduce the reliance on non-Saudi pharmacists and achieve the government goal of re-nationalisation of the profession.

Quotes from academics:

A3: *“Most of the Saudi pharmacists prefer to work for [the] government; you know the working conditions in the private sector are hard for them. For example, it is normal to work for up to 13 hours.”*

A4: *“Job opportunities [in] the public sector are rare. The private sector, especially community pharmacies, provides promising employment opportunities.”*

A5: *“I believe that the private sector still has job opportunities compared to the government sector.”*

The interviews with pharmacy practice stakeholders resulted in the following themes.

First: “Mismatch between education and practice. Hospitals that have established clinical pharmacy services are more fit to the training outcomes of the Pharm.D. programme”

Hospitals with clinical pharmacy services were more able to identify and utilise the skills and competencies expected from Pharm.D. graduates, such as drug monitoring, patient counselling and drug information. On the other hand, hospitals with no clinical pharmacy department do not offer the opportunities or the facilities to help Pharm.D. graduates apply their skills in practice.

Supporting participant quotes include:

H1: *“Pharm.D. students are disciplined and love to search for the information by themselves... Although they [only] come to us for a short period of time... it motivates [them] to take advantage of practising clinical pharmacy as they know it is the only hospital with clinical pharmacy services.”*

H6: *“The obstacle is that [the] centre here does not offer clinical pharmacy, so Pharm.D. graduates are placed at a hospital that is inappropriate for the application [of] their clinical skills, as we don’t have ward rounds.”*

Second: “Insufficient training sites and inappropriate working environments”

Most of the participants agreed that the number of pharmacy graduates is much higher than the capacity of hospitals to accommodate pharmacy trainees. The quality of the training drops as the workload on the preceptors increases. This reinforces the previous findings that workforce monitoring is necessary to overcome these obstacles.

Supporting quotes include:

H5: *“The workload is very high; we have high numbers of patients. If the number of students is limited, we would have more time to train them properly. Also, if we train only one programme’s graduates or if we take only the top students, which are more disciplined and have better research skills, training would be easier.”*

H2: *“The number of pharmacy trainees increased to double last year. The limited space in the pharmacy, which is barely enough to accommodate the staff, isn’t an ideal place to train graduates. Also, having a full-time preceptor would be great to make sure that students are given the time and training required.”*

Several limitations related to hospital training were identified. First, few knowledgeable staff with the required competencies are available to train young pharmacists. Staff have a high workload, especially during the holiday seasons when most of the staff take their annual leave. Utilising the university hospital would reduce the load on the other hospitals and having preceptors who work full-time to train students would ensure that students are trained to the required standard.

Participant quotes explaining non-student related factors include:

H4: *“Having sufficient clinical pharmacists working as a part of [a] multi-disciplinary team is essential.”*

H6: *“I think the challenge now is that we don’t have full-time preceptors in the hospitals. Another challenge is that clinical pharmacy is not implemented, so I can’t train Pharm.D. students properly.”*

Third: “Imbalance between pharmacy workforce supply and demand”

Globally, the role of the pharmacist has expanded and so have the pharmacy profession career pathways. Pharmacy education in the region responded to the global trends in pharmacy education faster than it responded to the changes in pharmacy practice. In other words, the Pharm.D. programme was established without a comprehensive assessment of the job market in the Asir region, which currently offers very limited job opportunities for clinical pharmacy practice. The Ministry of Health (MOH), which is the main governmental employer, has been supporting the expansion of the pharmacist's role, but the transition phase is likely to take some time to be fully implemented.

Participant quotes include:

H6: “Unfortunately, the number of pharmacy graduates by far exceeds the available jobs. On the other hand, there is a great need for pharmacists.”

H3: “The number of pharmacy graduates is increasing, but [there are only two to three] job vacancies in [the] MOH. There are more jobs [in] the private sector, but they are not as secure as the governmental jobs.”

H1: “I personally think that pharmacy graduate numbers are higher than the jobs in the market...the private sector seems to offer more jobs than the public sector.”

The focus groups conducted with pharmacy students resulted in several themes as well.

First: “The negative effects of running two programs as noted by the students”

Students enrolled in the two programmes face some struggles, because students from different levels must sometimes share courses. In addition, the insufficient number of staff create a high workload, resulting in large classes and some lectures scheduled after 5 pm. The B.Pharm. students felt that having another programme, which is perceived to be more prestigious and reputable, made society less respectful of their programme. Additionally, having two programmes results in an increase in the intake of students without the necessary preparation in terms of staff numbers and their qualifications, the capacity of the educational institution, and the capacity of the training sites. An additional obstacle is that the pharmacy college at KKU is required to accept a certain number of students every year. The B.Pharm. students raised a point about the experiential training; Pharm.D. students spend a year in their training and are paid for this, while B.Pharm. students spend only four months. Furthermore, B.Pharm. students are limited in their choice of training sites compared to the Pharm.D. students.

Student quotes include:

S1: “...We have a problem with arranging the exam timetable with other groups; academic staff workload reduces the quality of their teaching.”

S2: “There are few academic staff, especially in the department of clinical pharmacy...when we were in level seven, we took a course with final year B.Pharm. that caused a problem in arranging the exam timetable and a lack of coordination to change some lectures.”

S15: “Our training [Pharm.D. programme] is much better than yours [speaking to a B.Pharm. student]; we spend a year.”

S4: “...but the college cares more for the Pharm.D. students' training; they make sure they get their training in the best hospitals in the region.”

Discussion

The education stakeholders in Saudi Arabia, including KKU, have responded to global influences that shifted pharmaceutical education towards a more patient-oriented education, as found in the Pharm.D. programme. The 17 newly established pharmacy schools that opened after this shift did not face the challenge of having two programmes running simultaneously; they opted for the Pharm.D. programme. This was not the case with KKU.

At the institutional level, running two programmes has resulted in high workloads for the academic staff. It also created some sensitive feelings between students in the two programmes in terms of the length of their training, their monthly payment during training, and the arrangement of their timetables. This finding was verified by the KKU academics, who supported the idea of keeping one programme (Pharm.D.) and phasing out the other.

While education stakeholders in Saudi Arabia have shifted pharmaceutical education towards a more patient-centred approach, the policy makers at the MOH are responding at a much slower rate to the global changes in pharmacy practice.

In other words, there is a mismatch between education and practice. Aljidai *et al.* (2016) noted the challenges that limit the implementation of clinical pharmacy education in Saudi Arabia. These challenges include inadequate numbers of clinical faculty, of qualified preceptors, and of advanced practice sites. In this study, pharmacy practice stakeholders identified similar barriers in the Asir region.

The College of Pharmacy at KKU is not the only college that runs two undergraduate programmes. In the US, the College of Pharmacy at Purdue University and the College of Pharmacy at Long Island University both run two different undergraduate programmes. The Bachelor of Science in Pharmaceutical Science, which is a four-year programme, produces pharmacy graduates who are prepared to work in fields such as pharmaceutical and

cosmetic manufacturing, marketing and sales, and insurance. This degree, however, does not allow graduates to become licensed pharmacists. Their Pharm.D. programme is a professional degree programme that produces graduates who are ready to sit the licensing exam to practise pharmacy. These two programmes were designed according to needs-based education, where each programme produces graduates who are educated and trained to serve in different types of pharmacy practice. In other words, these programmes are not interchangeable (Long Island University Pharmacy, 2017; Purdue University, 2017). By contrast, KKU pharmacy students graduate from one of two programmes, but both end up being registered as pharmacists by the The Saudi Commission for Health Specialties (SCFHS), which is the body responsible for evaluating, approving and classifying health certificates. An analysis of the job market in the Asir region revealed that the fields of pharmaceutical industry, marketing and manufacturing are not well established, which supports the idea of phasing out the B.Pharm. programme.

Pharmacy practice stakeholders indicated that an oversupply of pharmacists exists in the region. For example, in 2017, the Ministry of Civil Services representing the MOH, which is the main employment body for the government's healthcare centres in Saudi Arabia, offered 13 job opportunities for pharmacists (ten for males and three for females), compared to 3,398 job opportunities for resident doctors and 1,551 for health specialists (Ministry of Civil Services, 2017). A total of 1,231 pharmacy students are expected to graduate from pharmacy colleges around the country in 2018 (SCFHS, 2018).

Pharmacy career pathways in Saudi Arabia include government non-military (*e.g.*, MOH centres), government military, and private health care, community pharmacies, academic institutions, the pharmaceutical industry, and other facilities, such as regulatory bodies (Almaghslah *et al.*, 2018).

In 2017, the KKU College of Pharmacy graduated 120 pharmacists, which supports the issue of oversupply due to the limited number of positions at the MOH. The growth in the number of pharmacy undergraduates and the reduced vacancy rates at the MOH provide evidence that more than enough pharmacists are trained. The SCFHS confirmed that there is an oversupply of pharmacists in the country and recommended that no more pharmacy colleges should be established. Phasing out the B.Pharm. programme at KKU would reduce the supply of pharmaceutical graduates in the Asir region (SCFHS, 2018).

The private sector is clearly the best option for additional jobs for pharmacy graduates, in spite of the negative perceptions. The government has successfully increased the proportion of Saudi employees in the public sector to 81% (4,715) (Almaghslah *et al.*, 2018). By contrast, the Health Statistics Yearbook (2016) notes that the total number of pharmacists employed in the private sector is 19,309, of which only 4.2% are Saudi and only 4.42% are female (Almaghslah *et al.*, 2018).

Another factor is the need for pharmacists working in private sector community pharmacies to be culturally aware, socially accountable and fluent in the language of the region; these characteristics could be better fulfilled by Saudi nationals, rather than expatriates. Since employment opportunities at the government pharmacies are limited, the private sector, particularly community pharmacies, should assume responsibility for re-nationalisation of the profession and provide more jobs for local pharmacists (Almaghslah *et al.*, 2018; Al Ruthia *et al.*, 2018).

In summary, phasing out the B.Pharm. programme would control the number of students enrolled in the college, as well as reduce the staff workload and improve the quality of education. It would also reduce the competition over training sites and prevent an oversupply of pharmacy graduates.

This study is not without its limitations. Efforts were made to ensure that the translation was accurate by double-checking the transcripts with a second Arabic-English speaker, but the colloquial language used when conducting the interviews may result in a loss of meaning in some instances. A snowball sampling technique was utilised to recruit participants, which might have limited the sample's variety.

Conclusion

KKU currently runs two undergraduate pharmacy programmes - B.Pharm. and Pharm.D. - with the opening of the second programme (Pharm.D.) being a result of national and international influences in pharmacy education. This study was conducted to explore the effects of running two pharmacy programs at KKU. The study revealed that this situation has several negative consequences on an institutional level, such as a high workload for academic staff and sensitivities between the students of the two programmes. Also, the two programmes resulted in a higher number of graduates than the local job market could handle, creating an imbalance between the supply and demand of pharmacists. Based on the study participants' comments, phasing out the B.Pharm. programme would be the most suitable decision for all stakeholders.

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