



ORIGINAL ARTICLE

Pharmacist, the pharmaceutical industry and pharmacy education in Saudi Arabia: A questionnaire-based study



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Abstract *Background:* In Saudi Arabia there is an estimated need of more than 100,000 pharmacy graduates to cover all present sectors. The shortage of pharmacists has affected many of these sectors especially the pharmaceutical industry. The contribution of Saudi pharmacists to local pharmaceuticals industry would be extremely beneficial and important for shaping the future of the drug industry within the Kingdom. It is not clear whether future Saudi pharmacists are willing to contribute to local pharmaco-industrial fields. *Methods:* A cross-sectional, questionnaire-based survey was conducted on all final-year pharmacy students in King Saud University (KSU), Riyadh, Kingdom of Saudi Arabia (KSA). *Results:* Out of a total of 130 students registered in the final-year of the pharmacy program in KSU, 122 (93.8%) were able to complete the questionnaire. The results showed that the majority (83%) of Saudi pharmacy students indicated that they had not received practical training in the pharmaceutical companies, while only 17.2% of the students felt that they had the knowledge and the skills to work in the pharmaceutical industry after graduation. The majority of the students (66.7%) chose clinical pharmacy as their future career field while only 10.9% indicated willingness to work in a pharmaceutical industry career. Only 8.2%

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selected working in the pharmaceutical industry. The significant predictor of possibly choosing a career in the local drug industry is a student with a bachelor's degree (compared to Pharm D degree) in pharmacy (OR = 2.7 [95% CI 1.1–6.3]). *Conclusion:* Pharmacy students who are enrolled in the capital city of Riyadh are not properly trained to play an influential role in local drug companies. As a result, their level of willingness to have a career in such important business is not promising (more among Pharm D program). Future research in other pharmacy colleges within Saudi Arabia is needed to confirm such results.

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1. Introduction

The role of the pharmacist is not limited to medication dispensing and patient education, but extends further into discovering, evaluating and manufacturing medications. The World Health Organization (WHO) published reports on the role of the pharmacist in the healthcare system after reviewing papers published from different countries. The report emphasized the importance of the pharmacist's role in pharmaceutical companies and indicated that, without this role, the company should not be allowed to operate (WHO, 1997). In Germany and France, qualified employees in the pharmaceutical industry must also be well trained pharmacists in the field as there are no other degrees that could adequately cover their work responsibilities (Atkinson et al., 2012).

With respect to professional training and education, pharmacy schools predominantly focus on clinical aspects and direct students to hospital pharmacy as a favorable career (Helen Paine, 2008). Many studies were conducted to find out the proportion of the pharmacists working in the industrial field. In the United Kingdom (UK), out of 65,000 employees with different educational backgrounds, only 2000 are qualified and employed in the pharmaceutical industries, which represents only 3–5% of an industrial workforce (Bone, 1999). A survey conducted by a pharmaceutical company in the United States of America (USA) showed that pharmacists represent only 6.8% of America's workforce, but they play a vital role in the company (Riggins, 2000). Another study conducted by another pharmaceutical company in USA found that there was a decline in the enrollment of the pharmacists in the industrial field (Kerridge, 2003). In Europe, the total number of pharmacists working in the industrial field was estimated to be 37,308 (from 28 countries) out of 603,866 industrial employees (from 23 countries) (Atkinson et al., 2012).

In developed countries, great attention is being directed at the industrial field. One conducted study, mentioned that the pharmacy fellowship programs in the United States are categorized as either traditional or industrial. Out of the 131 fellowship programs in accredited U.S. schools of pharmacy, 58 of them focused on developing skills that support careers in the biopharmaceutical and pharmaceutical industry. Most of the industry fellowship programs are provided by academic institutions while some of them are offered by companies. Rutgers University in New Jersey, USA collaborates with 13 business partners to provide more than 70 pharmacy fellowships each year to prepare the students for a pharmaceutical industrial career. Massachusetts College of Pharmacy and

Health Sciences in Boston, MA also collaborates with pharmaceutical industries and provides various fellowship programs in clinical research, drug information, and regulatory affairs (Larochelle et al., 2009).

In Saudi Arabia, there are at least nine public and private pharmacy schools (Kheir et al., 2008). However, the country suffers from a shortage of qualified Saudi pharmacists (King Saud University College Website, 2014). The estimated need is more than 100,000 pharmacy graduates to include all sectors. According to a study done in Saudi Arabia, the most affected sector is the pharmaceutical industry which is suffering from a shortage of trained pharmacy staff (Saudi Arabia, 2008). Another Saudi researcher has described in his article the stages of development of pharmacy education in Saudi Arabia. In 1993, King Saud University developed a new curriculum that included 16 weeks rotations in various areas of the pharmacy profession, including pharmaceutical products and industrial pharmacy. In 2005, they established the doctor of pharmacy program (Pharm D) and the first batch graduated at the end of the 2010/2011 academic year. In both degrees Bachelor of Science in pharmacy (B.Sc. Pharmacy) and Pharm D students need to complete 500 h as Introductory Pharmacy Practice Experience (IPPE) in the following areas: Hospital, community pharmacy, and drug company business and scientific office. In addition, pharm D students need to complete one-year rotation as Advanced Pharmacy Practice Experience (APPE). The author of this article emphasized on the quality of industry-institute interactions to establish resources for research and development. King Saud University has set up six master and three Ph.D. programs to strengthen the relationship with the pharmaceutical industry and improve the research and development in the country (Asiri, 2011).

Due to the fast growing Saudi pharmaceutical industry, our aim was to study the readiness of pharmacy graduates in order to build strong career suites in the job market of the pharmaceutical industry. This work has been presented in part at the international conference on pharmaceutical affairs in Hyderabad, India 2012 (Salhia et al., 2012). No studies have been conducted on Saudi Arabia's pharmacy students on their preferred specialties and post-graduation career paths or whether they aspire to continue their studies as well as the factors that influence these choices. The outcome of this study will help us appreciate the opinion and the willingness of students to be involved in the industrial field. This research can be considered an assessment stage prior to putting efforts in promoting the involvement of fresh graduates into the drug industry job market in the KSA.

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