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Opinion

The breadth and depth of formal research skills training within pharmacy program curricula in selected Arabic-speaking countries ☆

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Abstract

Available formal research-related training opportunities in Arabic-speaking countries have not been explored in the literature; these opportunities are becoming increasingly important worldwide. The aim of this study was to characterize the integration of research skills in formal pharmacy programs in selected Arabic-speaking countries; we have examined the type and frequency of research skills applied and the value of integration of graduation research project in the program. A cross-sectional analysis including 51 pharmacy colleges listed in seven Arab countries was performed. Selected faculty members were asked to fill a survey based on five basic areas: (1) type of pharmacy degree offered by the institution, (2) formal research-related work, (3) required student research project, (4) elective research activities available, and (5) faculty comments on research-related coursework in their institutions. The majority of colleges offered a bachelor degree as their only professional degree (83%). All programs provided at least one component of the research-related coursework including statistics (73%), drug information/literature evaluation (71%), and research methodology (60%). Only six colleges (14%) provided coursework that addressed all components in their coursework. Graduation research project was a requirement in most schools (69%), and elective research-related coursework was available in some colleges (10%). All schools incorporated at least one research skill in their coursework. Most surveyed schools required coursework in areas supporting practical research skills.

Keywords: Research skills; Arab countries; Integrating research in education; Learning communities; Research

Introduction

Many key stakeholders in the profession of pharmacy in the United States (US), Canada, and the United Kingdom (UK) have advocated the value of incorporating research skills in pharmacy programs to advance the profession, increase pharmacists' knowledge, and develop critical analytical skills.[1–3] It is further stated that including research skills such as setting the basics of problem definition, research methodology, data gathering and interpretation, and results reporting are very similar to the steps required to construct solid pharmaceutical care plans in modern pharmacy practice.[4–6]

In 1956, Bloom[7] introduced the hierarchical taxonomy of knowledge, which meticulously differentiated cognitive skills from the acquisition of knowledge through levels of comprehension, application, analysis, synthesis, and

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evaluation. Another study[8] showed that early delivery of practical research skills (early practical experience) could orient medical curricula toward the social context of practice and strengthen students' affective and cognitive learning.

Many reports have assessed the status of research-related efforts in colleges and schools of pharmacy across the United States, United Kingdom, and other western countries. In a survey of pharmacy colleges in the United States ($n = 79$), 20 institutions (25.3%) required the completion of some component of a research project, and 12 programs (15.2%) required students to fulfill all components of a complete project.[9] Similar results were obtained in a later U.S. study, which found that institutions requiring the completion of a graduation research project provided the most comprehensive research skills training.[10]

Other studies have explored the inclusion of research projects and other related components in UK pharmacy curricula. Pharmacists who have graduated from programs with research skills integrated in their coursework have indicated that this research-based training improved their decision making and enhanced their marketability and effective functioning in their work.[11,12]

Although considerable differences were found in the operation of these programs, there was general consensus that a research project should continue to be an integral part of the UK pharmacy degree program, and further improvements need to be applied in research skills teaching methodologies.[13–15] Many institutions in the Arab countries started to implement clinical pharmacy services and to attract new graduates with more advanced professional degrees and research skills, often relying, on educational institutions to equip their graduates with the required knowledge and skills. This resulted in a drastic change in the pharmacy curricula in these countries, yet the studies describing the current status of pharmaceutical education in the Arab countries are scarce.[16–19] Formal research training content within pharmacy curricula in this region is still an unexplored area in the literature.

This study sought to characterize the integration of research skills in formal pharmacy programs in selected Arabic-speaking countries, describe the type and frequency of research skills applied, and examine the value of integration of graduation research project in the program.

Study design

A cross-sectional analysis of pharmacy research skills opportunities in 51 pharmacy colleges located in seven Arab countries was conducted over six weeks by e-mail and was completed by January 2013. Weekly e-mail reminders were sent out, and telephone calls were initiated for those who did not respond to our e-mails. Final responses to our survey were received by April 2013. The protocol for the investigation was reviewed and approved by Taibah University clinical research committee.

For the purposes of this article, a college or school of pharmacy was defined as any public or private college, school, or institution that offered a pharmacy program leading to one or more types of university degrees (e.g., Bachelor of Science in Pharmacy or Doctor of Pharmacy) in pharmacy or the pharmaceutical sciences. To be included in the analysis, programs were required to be nationally accredited in the country in which they operate, have listed courses on their websites that involved research skills training, and have an established research or formal training program.

Using an online professional network (LinkedIn®; Mountain View, CA), a convenience sample of 51 colleges was identified based on these criteria and the investigator's ability to contact potential subjects via direct messaging through this professional network (based on the target user's privacy settings). Potential subjects were from different pharmacy programs in these Arab countries, with the following countries represented (listed as the number of programs contacted out of the total number of accredited pharmacy programs in each country): Egypt (14 out of 27), Syria (10 out of 10), Saudi Arabia (11 out of 18), Jordan (9 out of 10), Morocco (2 out of 5), Lebanon (3 out of 5), and Libya (2 out of 3).

Study investigators began by gathering information on courses that taught and/or assessed research skills in each institution via information on their websites. Faculty members were selected from the LinkedIn© directory based upon their academic and administrative titles using a professional online network. At least one individual from each pharmacy program was asked to respond to survey delivered in Microsoft Word® (Microsoft Corporation; Redmond, WA) format to the e-mail provided by the faculty member on the professional network. Each participant's confidentiality was protected using a pseudonym for each university and identification numbers for individual participants. Study procedures and objectives were clearly communicated to all participants in the survey; all participants who agreed to participate signed an informed consent, which was part of the survey. Most respondents completed the survey by replying to the e-mail directly. Telephone reminders were

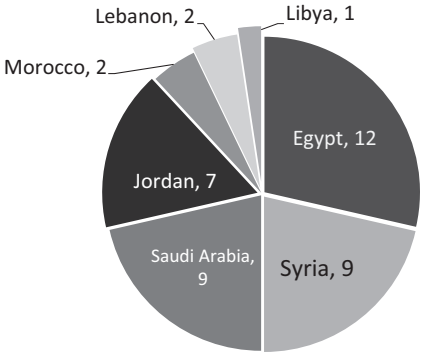

Fig 1. Pharmacy colleges distribution over the selected countries ($n = 42$).