

RESEARCH

Contemporary Professional Skills Development for Pharmacists in the Middle East

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Objective. To determine professional skills development and its utility among the “bridge” curriculum for undergraduate and graduate students in the Middle East.

Methods. Qatar University College of Pharmacy offers a part-time Doctor of Pharmacy (PharmD) program for licensed pharmacists, which includes pre-internship or “bridge” courses adapted from the undergraduate baccalaureate program. Assessments for all professional skills courses delivered in the undergraduate and post-baccalaureate part-time PharmD curriculums between 2011 and 2015 academic years were inventoried. The number and nature of assignments and exams administered to both student cohorts were identified and aggregate class scores recorded. Results were compared using Mann-Whitney tests for non-parametric continuous data with significance level (2-sided) set at $\alpha < .05$.

Results. Twenty-seven common assessments were conducted over a 5-year period. Overall, the performance between the undergraduate and graduate students was comparable except for specific assignments and in certain cohorts. Chart note documentation skills were poor among part-time PharmD students in both professional skills years and may be attributed to lack of prior instruction or current use in practice.

Conclusion. Our comparison of graduate and undergraduate student performance in a professional skills course series has reinforced its legitimacy in our part-time PharmD bridge curriculum. Such quality assurance is relevant for programs offering advanced degree training for licensed professionals to ensure ongoing alignment of student abilities with desired educational outcomes and ultimately, delivery of patient care.

Keywords: professional skills, patient care, continuing education, distance-based learning

INTRODUCTION

Sustained shortages in the global pharmacy workforce threatens the ability of health care systems to meet medication-related needs.¹ Several countries in the Middle East are undergoing rapid expansion in population and associated health care demands of its residents. It has been estimated that thousands of new health professionals are necessary to support anticipated levels of care across the region over the next 40 years.² In the last decade, Gulf Corporation Council (GCC) countries experiencing marked economic growth have responded with significant investment in education infrastructures to help meet this demand and augment provision of

health services. To mitigate reliance on an expatriate workforce, Bahrain, Kuwait, Oman, Saudi Arabia, the United Arab Emirates, and Qatar, have launched domestic training programs for a myriad of health care providers including nurses, pharmacists, physicians, dietitians, respiratory and physical therapists, pharmacy and laboratory technicians, and paramedics.³ Frequently, these curricula have been transplanted from North American or European programs and are delivered by expatriate faculty at branch campuses established locally.⁴ The appeal of international partnerships reflects increasing standardization of health sciences education and the desire of Middle East region universities and colleges to emulate perceived global leaders. Local students can access high-caliber programs of repute without leaving home.

A college of pharmacy (CPH) was established in 2007 at Qatar University (QU) as the first and only

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domestic pharmacy school in the country. While it is not a satellite or branch campus of another overseas affiliate university, it is the first program to be internationally accredited by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) and as such, its curriculum follows the same standards and educational outcomes as all pharmacy colleges in Canada. In addition to a 5-year undergraduate degree program leading to a bachelor of science in pharmacy (BScPharm, still the current entry-to-practice degree in the country), QU CPH also offers a post-baccalaureate Doctor of Pharmacy (PharmD) degree. A full-time PharmD degree program is offered to QU BScPharm graduates who then directly enter a one-year internship phase (eight advanced clinical rotations, each four weeks in duration) completing experiential training with pharmacist mentors in direct patient care in the country. A part-time PharmD program is available to pharmacists graduating from other pharmacy programs and who are employed in pharmacy settings in Qatar. In this program, graduate students must complete one to two years of “bridge” courses before reaching the internship phase.

Prior to the first graduating class of 2011, all pharmacists working in Qatar acquired their qualifications abroad. As such, the workforce is a heterogeneous population of professionals with diverse training who have graduated from regional programs that heavily focus on the science of pharmacy rather than the skills required for providing pharmaceutical care.⁵ In one self-assessment study, Qatar pharmacists have highlighted the need to further develop abilities related to communication, evidence-based drug information and patient care.⁶ To prepare these graduate students for advanced clinical practice expected during the internship phase, they are enrolled in a series of professional skills courses that form part of the overall “bridge” curriculum. The professional skills course series content focuses on development of pharmacist roles related to pharmaceutical care, medication prescribing and dispensing processes, and drug information retrieval and application. Through in-person, laboratory-based activities and simulations, students are trained to exercise written and oral interpersonal and interprofessional communication and advance the knowledge and skills needed to interact appropriately with patients, families and other health care professionals. All learning activities are conducted in a simulated practice environment to promote development of practical applicable skills. Consistent with other CCAPP-accredited colleges, educational outcomes addressed in the professional skills course series are mapped to the Program-Level education outcomes set by the Association of Faculties of Pharmacy of Canada

(AFPC) and include the Care Provider, Communicator, Collaborator, Manager, Advocate, Scholar and Professional.⁷ These educational outcomes are assessed throughout the course series by various means including written assignments and patient simulations. All practical simulations are developed with the intention to assess a specific competency with focus given to a specific skill, but incorporate a range of patient complexities.

Pharmacists enrolled in our part-time PharmD program often have several years of practice experience. Unlike other pharmacy programs offering advance degree programs for licensed pharmacists, QU CPH does not conduct an assessment of prior learning in order to assign credit or waiver of course requirements for demonstrated competencies. We therefore sought to compare part-time PharmD student and undergraduate student performance in the professional skills course series to help determine the utility of this course among the “bridge” curriculum for these graduate students.

METHODS

The professional skills course series has been offered in the part-time PharmD bridge years 1 and 2 curriculum since the first cohort of graduate students was enrolled in 2011. Content is drawn from the second- and third-year undergraduate professional skills courses, but is monitored by coordinators to account for existing experience of these graduate students. For example, several lectures in the undergraduate course are devoted to pharmaceutical calculations and checking prescription accuracy, which are not incorporated into the PharmD bridge course given these students’ prior knowledge and extensive application in their existing work. Similarly, undergraduate instruction related to electronic patient health records is excluded.

All classroom content at QU CPH is audio-visually recorded using lecture capture software (ECHO360, Dulles, VA). These recordings are then uploaded to the associated course website (Blackboard course management software, Washington, DC) to accompany any posted handouts or other learning resource media. The part-time PharmD program is designed as a blended-learning experience, whereby enrolled students access course content in a distance-based fashion, but attend on-campus sessions to interact with faculty and classmates one evening each month of the semester for activities which complement the web-based content, as well as conduct some live assessments.⁸

Assessments for all professional skills courses delivered in the undergraduate and post-baccalaureate PharmD bridge curriculums were inventoried. The number and

Table 2. Professional Skills Course Assessment Comparisons Between Undergraduate Students and Part-Time PharmD Students in Bridge Year 2

Assessment	Academic Year											
	2012-2013			2013-2014			2014-2015			2015-2016		
	PharmD N=8	Undergraduate N=23	p value	PharmD N=7	Undergraduate N=21	p value	PharmD N=7	Undergraduate N=25	p value	PharmD N=5	Undergraduate N=25	p value
	M (SD)	M (SD)		M (SD)	M (SD)		M (SD)	M (SD)		M (SD)	M (SD)	
SMSA1 ^b	-	-	-	75.5 (14)	71 (9.9)	.54	79.1 (5.4)	78 (2.4)	.72	75 (6.8)	68 (8)	.09
SMSA 2 ^b	-	-	-	71 (9)	73.5 (17)	.77	81 (5.7)	73.9 (8)	.033	-	-	-
Chart	86.3 (3.8)	87 (3.8)	.67	77 (3.2)	87 (6.1)	.25	75 (5.4)	82 (3.7)	.004	84 (6.5)	94 (2.8)	.015
Documentation												
OTC Exercise ^c	73 (6.7)	89 (6.5)	.004	65 (10)	84 (6.4)	.001	80 (11)	80 (5.8)	.91	-	-	-
DI Exercise ^d	88 (5.4)	88 (8)	.91	-	-	-	-	-	-	-	-	-
TPN Exercise ^e	82 (1.9)	87 (3.6)	.22	-	-	-	-	-	-	-	-	-

^aAll assessments are presented as scores out of 100
^bSMSA = Structured Multi-Skills Assessment
^cOTC = over-the-counter
^dDI = drug information
^eTPN = total parenteral nutrition

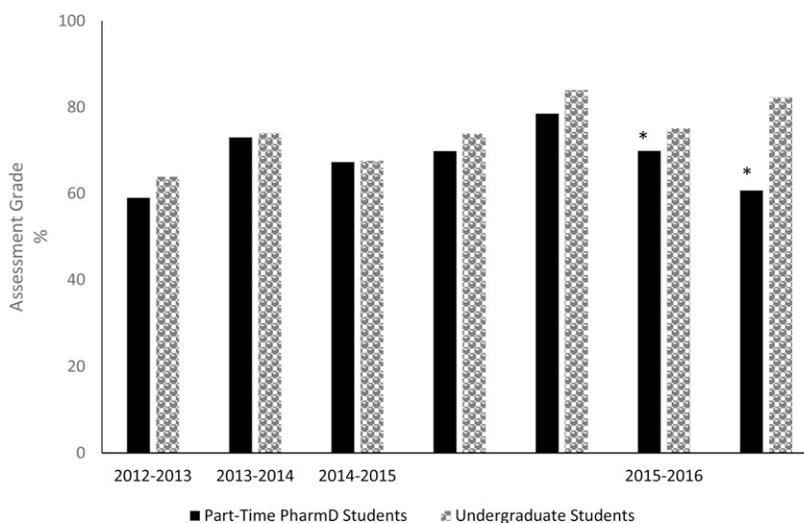
between academic years 2013 and 2015). As in bridge year 1, part-time PharmD students had lower scores in chart documentation. In 2012, overlapping evaluations of total parenteral nutrition (TPN) calculations, drug interaction detection and management cases, and over-the-counter (OTC) medication selection and counseling role-play exercises were assigned. Undergraduate and part-time PharmD students only differed in their assessed ability to gather information and make recommendations for either self-treatment or referral to a medical provider (mean 89% vs 73%, $p=.0004$). These exercises were later abandoned in the PharmD bridge course in order to consolidate the number of overall assessments.

DISCUSSION

Expanding scope of pharmacist practice in developing countries and industrialized nations alike are motivating pharmacists to seek further training, including pursuing advanced degrees. In turn, these programs are faced with the challenge to design curricula that enhance pharmacist competencies without disregarding existing knowledge and skills. At the same time, it is not always feasible to tailor content for individual students.

Each cohort of students entering the bridging phase of our PharmD program is different according to their previous education and practice experience. Overall the performance between the undergraduate and graduate students is comparable except for certain assignments and in certain cohorts. There were no major differences between the SMSA scores between the undergraduate and graduate students from year 1 to year 2, but the 2014 PharmD students in year 2 of the professional skills series performed significantly better, possibly due to practice experience unique to this cohort. On the other hand, chart note documentation skills were poor among PharmD students in both professional skills years. In our undergraduate program, in-class practice exercises are incorporated into many sessions to develop this skill whereas PharmD students have limited on-campus time to practice and receive immediate chart note feedback. Additionally, many care sites in Qatar do not incorporate pharmacist documentation in the patient's health record and in the absence of clear permitting policies, pharmacists will not write.¹⁰ Accordingly, this is an area where professional skills instructors can place more course emphasis and model best practices in a health care setting.

As most North American accreditation guidelines do not reference specific measures of distinction in the learning outcomes for students enrolled in traditional versus a nontraditional pharmacy education program,



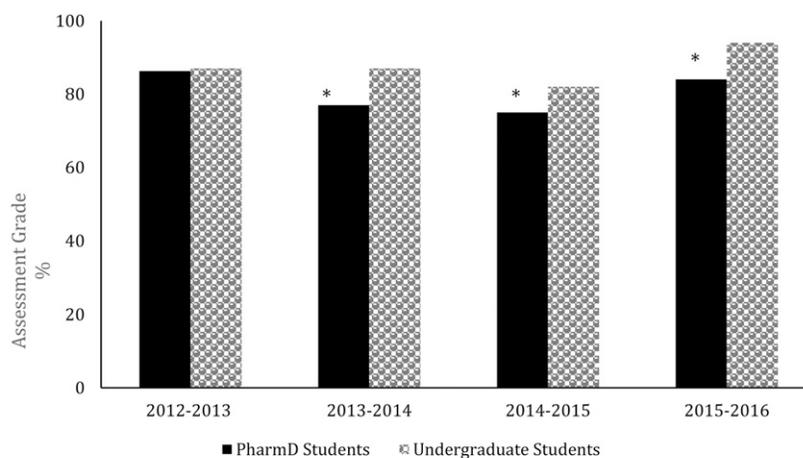
* p value < .05

Figure 1. Comparative Student Performance in Structured Multi-Skills Assessment Across Academic Years (Undergraduate and Part-time PharmD Bridge Year 1 Students).

individual pharmacy colleges are tasked with implementing assessment methods that most closely align with these guidelines and those that are most appropriate for the two sets of students. However, variability in academic performance may result due to the different educational strategies utilized in each of the individual programs. Like us, some colleges offering both traditional and nontraditional curricula have sought to determine if such a difference in educational outcomes do exist. In one study, investigators aimed to understand if any measurable differences in academic performance were present in required and elective courses for students enrolled in an off-campus non-traditional PharmD program with those enrolled in an on-campus PharmD.¹¹ The nontraditional PharmD curriculum investigated in this study incorporated a core pharmacotherapy course designed to resemble that in the traditional PharmD program. Retrospective analysis of final course grades showed no statistically significant differences in overall academic performance between the two groups. These findings would suggest that in this educational context, the performance of pharmacy students in off-campus, nontraditional programs is on par with those students based on-campus when provided comparable course material and assessed through the same outcomes measurements. Other research has examined the academic outcomes of distance-based PharmD students in an asynchronous nontraditional pathway when compared with in-residence students in the traditional pathway.¹² The retrospective analysis of scores arising from administering similar examinations

to both revealed average test scores of distance-based students were equivalent or superior, particularly when tested on physical assessment content. The authors attributed better performance on the physical assessment exams to practicing pharmacists having acquired this knowledge in their prior undergraduate pharmacy programs. Findings in these studies present similar outcomes as those found in our analysis where many assessment outcomes of students enrolled in our blended-learning program were not statistically different from the on-campus program. Our analysis however, offers further insight into specific outcomes of a professional skills course rather than overall cumulative outcomes.

Our experience developing a blended-learning, part-time PharmD program bridge curriculum targeted at practicing pharmacists with varying educational background in this Middle East context is a unique experience, but provides lessons to faculties elsewhere offering advanced training degrees for health professionals. Firstly, although undergraduate course content could be offered “as is” to these graduate students, it was necessary to modify learning activities planned for the on-campus sessions to ensure they met the distinct needs of these practicing pharmacists, specifically giving opportunity to relate subject matter to their current practice.¹³ Therefore, specific dedicated resources are necessary for program delivery with an understanding of the faculty workload required.^{14,15} Secondly, greater emphasis can be placed on orienting such students to the fundamental concepts in the underlying courses within their curriculum and affording more opportunities for



* $p < .05$

Figure 2. Comparative Student Performance in Structured Multi-Skills Assessment Across Academic Years (Undergraduate and Part-time PharmD Bridge Year 2 Students).

practice. Given developments in pharmacist scope of practice since first licensing or in our particular Middle East context, non-patient centered nature of their prior education, students may be anxious or unsure of what to expect when enrolling in an advanced degree program. For example, students in our part-time PharmD program were unfamiliar with SMSA as a knowledge and skills assessment, so a number of mock SMSA exercises were conducted to familiarize them with the process. Thirdly, a course coordinator familiar or contributing to the undergraduate professional skills course involved in its delivery for the graduate students is critical to ensure content consistency. Finally, maintaining flexibility in the study plan and continuously seeking student feedback on how to modify content, as well as incorporating innovative instructional approaches for blended-course delivery can further support successful delivery of these programs.

There are limitations to our findings. Specifically, the cohort of enrolled part-time PharmD students is much smaller than the undergraduate class size, and so our comparisons are subject to measurement errors associated with small sample populations. Similarly, annual performance scores of this graduate student cohort is vulnerable to the varying baseline capabilities of those admitted given how outliers would affect the aggregate data. The knowledge content of the SMSA stations was different each year and so by chance, some pharmacists may be more familiar with care decisions of certain co-morbidities from their practice experience. Finally, while we used course assessments to compare students' professional skills performance to guide future part-time PharmD bridge curriculum

content, these decisions may be further informed by accompanying qualitative inquiry into PharmD student and alumni perspectives using interview or focus groups.

CONCLUSION

Our comparison of graduate and undergraduate student performance in specific overlapping assessments within a professional skills course series has reinforced its legitimacy in our part-time PharmD bridge curriculum. Such quality assurance is relevant for programs offering advanced degree training for licensed professionals to ensure ongoing alignment of student abilities with desired educational outcomes and ultimately, delivery of patient care.

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