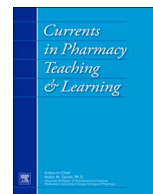




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Experiences in Teaching and Learning

## Incorporating age-related special populations into a pharmacy skills laboratory course sequence

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## ABSTRACT

**Background and purpose:** The purpose was this study was to evaluate the incorporation of geriatric and pediatric therapeutic concepts into a pharmacy skills laboratory (PSL) course sequence. Secondary outcomes were to describe the incorporation and evaluate the assessment effectiveness of these topics. Educational activity and setting

Teaching materials and assessment data from the PSL course were evaluated for inclusion of content regarding age-related special populations.

**Findings:** Materials reviewed from 205 PSL sessions held over four years demonstrated 89 (41.5%) sessions incorporated age-related topics using a variety of methods. Quiz and exam item performance was acceptable with an average difficulty index of  $77.2\% \pm 21.3$  and  $85.8\% \pm 12.8$ , respectively. The average objective structured clinical exam (OSCE) score was also satisfactory at  $83.2\% \pm 3$ .

**Discussion and conclusions:** Age-related topics were included in several PSL sessions. These incorporation strategies were deemed to be effective as students performed well on written assessments and OSCEs. Additional PSL sessions were identified as potential targets for incorporating age-related special populations into future PSL offerings.

## Background and purpose

Professional pharmacy organizations have published several calls for the teaching or expansion of basic geriatric and pediatric content within pharmacy curricula.<sup>1–6</sup> In the didactic portion of the 2016 Accreditation Council for Pharmacy Education (ACPE) curriculum standards, age-related populations are briefly mentioned in the clinical sciences section of pharmacotherapy where the standards state there should be an “emphasis on...treatment of patients across the lifespan.”<sup>7</sup> The 2013 Center for the Advancement of Pharmacy Education (CAPE) educational outcomes stated pharmacists must be capable of “providing care of diverse patient populations” and recognize age as a part of the social determinates of health definition for utilizing cultural sensitivity.<sup>8</sup> With the curriculum standards becoming broader in requirements, we must ensure students are educated on basic age-related concepts and topics encountered regularly by pharmacists in practice.

In 2007, Odegard et al.<sup>2</sup> encouraged curriculums to “facilitate competency in geriatrics” and expose students to geriatric concepts “throughout a curriculum.” Specific recommendations were provided for incorporating geriatrics into a variety of classroom settings, including a skills laboratory. In 2015, the American Society of Consultant Pharmacists (ASCP) published an updated “Geriatric Pharmacy Curriculum Guide” that provided a list of general competencies in geriatric care and an educational toolkit with

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recommendations for didactic and experiential pharmacy curriculums.<sup>1</sup>

In 2005, an American College of Clinical Pharmacy (ACCP) Pediatric Practice and Research Network (PRN) opinion paper advocated for incorporating pediatric concepts earlier in curriculum and increasing students' awareness of this population.<sup>4</sup> A list of recommended pediatric topics with additional strongly encouraged elective topics for all pharmacy curriculums to include was provided. Specifically, the authors called for a minimum of 25 hours of didactic pediatric education beginning in the first professional year. In 2014, the ACCP Pediatric PRN, jointly with the Pediatric Pharmacy Advocacy Group (PPAG), released another opinion paper stating "all pharmacists should receive a basic pediatric pharmacotherapy education."<sup>5</sup> Specific topics identified correspond to the basic skills pharmacists need to appropriately assess and prepare a pediatric prescription.

Pharmacy curricula today encompass a variety of classroom and pharmacy skills laboratory (PSL) courses within their didactic portion of the curriculum. A few descriptions of geriatric and pediatric elective courses within a pharmacy curriculum have been published.<sup>9-12</sup> Gerber et al.<sup>13</sup> described the incorporation of pediatric pharmacokinetics within a therapeutics course and Salintri<sup>14</sup> reported objective structured clinical exam (OSCE) scores related to pediatric and geriatric topics within a pharmacotherapy course. In addition, Chen et al.<sup>15</sup> described a single geriatric pharmacy practice laboratory experience. However, no currently published report describes the incorporation of geriatric and pediatric topics within a single course or throughout a course sequence.

With course integration increasing in current curriculums, individual courses related to age-related special populations may be removed. However, variations of PSL remain a core component of most curriculums. The objective of our study was to evaluate the incorporation of geriatric and pediatric concepts into a PSL course sequence over a four-year period. Secondary outcomes were to describe the incorporation of age-related concepts into the PSL setting and evaluate student assessment performance.

## Educational activity and setting

### *Curriculum evaluation*

Contemporary Aspects in Pharmacy Practice (CAPP) is a six-semester two credit-hour PSL course sequence for first through third year pharmacy students. Students attend a one-hour pre-PSL lecture and a two-hour PSL session. There are approximately 32 students in each of the four PSL sessions on the main campus and 24 students in the one satellite campus session, totaling 150 students in the course. Each campus has an equivalent laboratory classroom setting for the course.

A primary course coordinator for each semester oversees the course management and faculty member content experts develop the content and assessments for the weekly PSL sessions. Each week's topic may be focused to a single concept such as glucose meters or may be a general concept such as geriatrics. PSLs covering general concepts have the capability to incorporate multiple topics within the session. Concepts and topics primarily run parallel to the pharmaceutical sciences and management courses in the first and second year and the therapeutics course in the third year of the curriculum.

### *Evaluation of assessment methods*

Depending on the semester of the course, student assessment occurs through laboratory readiness assessment (LRA) quizzes, test questions on course exams, and/or an OSCE. LRAs are three question, electronic, multiple choice assessments students individually answer at the beginning of the PSL session. Content is based upon pre-PSL materials including the pre-PSL lecture. LRAs are a component of all three years of the PSL sequence. The first and second year courses have a midterm, cumulative final exam and OSCEs. Each third professional year course has one written exam covering topics not assessed in the OSCE examination. OSCEs are a multiple station clinical skills examination designed as interactions between a student and a standardized patient. Students are not told specific topics for the OSCEs but which PSL sessions will have corresponding OSCE assessments. Each OSCE has an analytical checklist developed by the faculty that includes assessment sections on gathering information, options/management strategies, and monitoring/follow-up. The faculty member or trained standardized patient completes an objective communication skills rubric and a global evaluation rubric for each student. Passing scores are set at 70%.

Our study evaluated the incorporation of geriatric and pediatric topics within each PSL session of the six CAPP courses. The study protocol was approved by the university Institutional Review Board. Faculty and student materials for each PSL session of four academic years of the six courses were reviewed for geriatric and pediatric topics by two faculty members with geriatric and pediatric expertise. Geriatrics was defined as a patient 65 years of age or older and pediatrics was defined as a patient 18 years of age or younger. PSL materials and assessments had to be directly related to the care of a geriatric or pediatric patient for inclusion. Compounding, calculation and motivational interviewing skills PSL sessions were excluded from this study. Additionally, the first-year students complete the American Pharmacy Association Pharmacy (APhA)-Based Immunization Delivery training program. Since the APhA materials and standardized exam were not created by our faculty, we did not include this PSL session in our assessment but acknowledge the incorporation of ages within the topic.

PSL sessions including geriatrics or pediatrics were noted in a Microsoft Excel<sup>®</sup> database documenting the course semester, year, PSL session title, PSL activity description, and age of the patient in the PSL activity. In addition, it was noted if the topic had LRA items, exam items, or OSCE assessments related to a geriatric or pediatric patient. Next, assessment data was retrieved and documented in the database. Our school implemented ExamSoft<sup>®</sup> gradually in courses starting in fall 2014. Initial statistical analysis of examination items was completed through Canvas<sup>®</sup>, ExamSoft<sup>®</sup>, or by the university test scoring service. All LRAs were assessed within Canvas<sup>®</sup> or ExamSoft<sup>®</sup>. OSCE performance was evaluated within Microsoft Excel<sup>®</sup> or ExamSoft<sup>®</sup>. Once the assessment data was collated, descriptive statistics were conducted within Microsoft Excel<sup>®</sup>.

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