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INSTRUCTIONAL DESIGN AND ASSESSMENT

Early Clinical Experiences for Second-Year Student Pharmacists at an Academic Medical Center

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Objective. To examine student outcomes associated with the Student Medication and Reconciliation Team (SMART) program, which was designed to provide second-year student pharmacists at the University of North Carolina (UNC) Eshelman School of Pharmacy direct patient care experience at UNC Medical Center.

Design. Twenty-two second-year student pharmacists were randomly selected from volunteers, given program training, and scheduled for three 5-hour evening shifts in 2013-2014. Pre/post surveys and reflection statements were collected from 19 students. Data were analyzed with a mixed methods approach.

Assessment. Survey results revealed an increase in student self-efficacy ($p<0.05$) and positive perceptions of SMART. Qualitative findings suggest the program provided opportunities for students to develop strategies for practice, promoted an appreciation for the various roles pharmacists play in health care, and fostered an appreciation for the complexity of real-world practice.

Conclusion. Early clinical experiences can enhance student learning and development while fostering an appreciation for pharmacy practice.

Keywords: clinical experiences, self-efficacy, student development, experiential learning, pharmacy practice

INTRODUCTION

Engaging students in real-world, patient-centered care throughout their pharmacy education and training can help prepare them to meet the future health care needs of society.[1,2] In his 2011 Harvey A.K. Whitney Award Lecture, Daniel Ashby noted that key to "shaping the future of pharmacy" and "advance[ing] the role of the pharmacist in providing direct patient care" were "activities for student pharmacists and pharmacy residents [that] support the educational goals for both groups through their active involvement in the care of patients."[3]

Along the same lines, recommendations from the Pharmacy Practice Model Initiative (PPMI) Summit emphasized the importance of working collaboratively with health systems to prepare student pharmacists for emerging and ongoing health care challenges.[4] For example, recommendation B27 suggests that "curricular changes are required in colleges of pharmacy to prepare students for a significantly larger role in drug therapy management than is currently achieved in most hospitals and health systems" and recommendation E4m assumes "training for all pharmacy students on the roles of safety and quality in the medication-use process (through collaboration between hospitals and health systems and colleges of pharmacy)."[4] Despite the recognized need to work collaboratively to provide meaningful training opportunities for student pharmacists, incorporating student pharmacists into a model of care that highlights their practicality to the health care team continues to be a challenge and subject of study.

Although the literature provides some insight into the impact of immersing student pharmacists in the provision of direct patient care,[5-8] there is a sizable gap concerning: (1) clinical experiences involving direct patient care for student pharmacists prior to their third year of professional school; and (2) the impact of these experiences on student self-efficacy and professional identity development. The lack of literature concerning early clinical experiences

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involving medication history taking and reconciliation is somewhat surprising given Accreditation Council for Pharmacy Education (ACPE) accreditation guidelines that state introductory pharmacy practice experiences (IPPEs) should "permit students, under appropriate supervision and as permitted by practice regulations, to assume direct patient care responsibilities."[9] As schools pursue curricular change and move toward implementing clinical immersion of early learners,[1,10] understanding the outcomes associated with incorporating student pharmacists in the health care team early in the curriculum is critical.

The Student Medication and Reconciliation Team (SMART) program was designed to provide second-year student pharmacists with real-world experience in an academic medical center. Experiential learning, which provides opportunities for students to create knowledge in context, is based in part on the work of Kolb, who defined learning as, "the process whereby knowledge is created through the transformation of experience."[11] Experiential learning can promote student development[12] and we hypothesized that immersing students in the process of acquiring medication history as a part of the experiential learning cycle would improve student self-efficacy and facilitate identity development.

In higher education, students move through a series of vectors to achieve identity, such as developing competence, moving through autonomy toward interdependence, developing mature interpersonal relationships, establishing identity, and developing purpose.[13,14] This development can be significantly impacted by self-efficacy, defined as one's perceived ability to organize and execute a course of action.[15] As such, engagement in real-world experiential settings during the second year of a pharmacy curriculum can provide a foundation for student pharmacist development. The purpose of this project was to provide critical insight into the value and feasibility of the SMART program as a model for early clinical experience in pharmacy education. Specifically, the objectives were to examine the impact of early clinical experiences on student pharmacist self-efficacy and identity development, and student satisfaction with the SMART program. Although the SMART program assessed both organizational and student impact, the focus of this paper is on outcomes associated with student experiences in the program.

DESIGN

All second-year, doctor of pharmacy (PharmD) students at the University of North Carolina (UNC) Eshelman School of Pharmacy who passed their Standard Patient Interviews and one semester of introductory pharmacotherapy were eligible for SMART. The SMART program was not an IPPE and no course credit or incentives were provided to participants. Original design called for 24 participants: 12 in the fall cohort and 12 in the spring cohort; however, scheduling conflicts and the timing of spring break dictated a reduction in spring participants to 10. All participants (n=22) were randomly selected from volunteers recruited during a required course for second-year students. Twelve students were scheduled for participation in fall 2013 and 10 in spring 2014. All participants provided informed consent. Participation in the SMART program was voluntary, and participants could excuse themselves from the program at any time for any reason. This study was approved by the UNC Institutional Review Board (IRB).

Prior to the study, all participants attended an orientation and completed required training. This orientation better detailed the patient population, practice sites at UNC Medical Center, and familiarized participants with the electronic medical record systems at UNC. Participants completed various online training modules in order to obtain access to the medical record system at UNC Medical Center and were required to pass a medication history competency to the satisfaction of program coordinators.

Each student was scheduled for three 5-hour shifts (approximately one shift every 3 weeks). Shifts were held from 4 to 9 pm, Monday through Friday, and one student served on each shift. In accordance with the SMART operational protocol, a licensed pharmacist supervised all shifts. At the beginning of the first shift, the student met the daytime clinical pharmacist generalist, who determined which patients admitted in the past 24 hours needed a medication history. The pharmacist provided an orientation of the facility, including a tour of the units and introduction to the medical team if present. The pharmacist watched the student perform the first history and signed off on completeness, giving feedback to the student as needed. During rotations, each student performed medication histories for patients admitted to assigned inpatient hospitalist services using a standardized medication history form (Appendix A) and documented a detailed medication history for the medical record in accordance with standards set at UNC Medical Center Department of Pharmacy for medication history acquisition. These standards include interviewing the patient, interviewing a family member or guardian (if applicable), calling the patient's pharmacy, and requesting a medication administration record (MAR) if transferred from a long-term care or skilled nursing facility.

The student then completed a medication history interview of the patient with direct pharmacist oversight. The pharmacist provided feedback to the student and had the student complete the history by calling the pharmacy or obtaining an outside MAR. Once completed, the student discussed findings with the pharmacist who facilitated the process of reconciling the patient's medications

with the medical team, which included nurses, doctors, and other members of the health care team. The daytime clinical pharmacist generalist then transitioned the oversight to the evening pharmacist, who supervised the same process for the remainder of the shift or until all identified patients had a medication history completed. Each student was given a 30-minute dinner break during the shift. Prior to leaving for the evening, the student recorded the medication histories and the pharmacist documented the interventions performed. The same process, without the facility orientation, was performed for subsequent shifts for each student until all medication histories were completed or the 5- hour shift ended, whichever came first.

To assess student learning and development, a preSMART survey was administered prior to training to collect demographic data and measure self-efficacy as it relates to medication history acquisition. The self-efficacy scale was developed using Bandura's guidelines.[15] Student participants were asked to rate on a scale of 0 (cannot do at all) to 10 (highly certain can do) the certainty with which they believed they could perform 11 medication history acquisition tasks. These tasks were directly related to the SMART protocol and agreed upon by the research team as relevant to the project. After each shift, participants were asked to provide a 2-3 sentence reflection statement to the primary investigator. Following completion of the SMART program, each participant completed a postSMART survey that measured self-efficacy[15] and professional identity development[13] and provided an evaluation of the SMART program. All questions other than the self-efficacy items were measured on a 5-point Likert scale ranging from strongly disagree to strongly agree.

Survey data and reflection statements were collected using an electronic platform by a study investigator who was a nonteaching/precepting faculty member, and deidentified prior to dissemination. Because of the small sample size and short Likert scales, nonparametric tests were used to measure differences between groups and changes in pre/post survey responses. Wilcoxon signed-rank testing was used to compare pre/post SMART survey responses, Mann-Whitney U was used to examine group comparisons, and Spearman's rho was used to investigate correlations between variables. Exact methods were used where appropriate. Continuous data are represented as mean [standard deviation (SD)]. Significance was established at $\alpha=0.05$. All quantitative data were analyzed using SPSS, v21 (IBM, Armonk, NY). No patient identifiers were collected.

Qualitative data (eg, reflection statements) were analyzed using thematic coding. Following data collection, text was consolidated into a single file and all identifiers were removed prior to analysis. A constant comparative approach was used independently by 3 researchers to identify categories that characterized the experiences of students in the SMART program. In cases where thematic coding diverged, the researchers discussed their analyses until consensus was reached. Select quotes from student reflections are reported to reflect findings from the qualitative analysis.

EVALUATION AND ASSESSMENT

Nineteen students completed all required training and attended at least one SMART shift. Although 22 students were trained for the fall and spring cohorts, 3 students were unable to complete any assigned shifts and were subsequently removed from all data analyses. In fall 2013, 25 shifts (76%) were completed by 11 students. In spring 2014, 19 shifts (79%) were completed by 8 students. Two missed shifts were a result of weather, during which the university was closed. Of the 19 students who were immersed in the SMART program, 13 were female (68.4%). Eleven students indicated their race as white (57.9%), 5 as Asian (26.3%), and 3 as other (15.7%). In the preSMART survey, the majority of students (n=18, 94.7%) reported having volunteered or worked in a pharmacy setting prior to SMART, with 12 students (63.2%) reporting more than 100 hours of work [665.1 (1346.5) hours, range 0 to 6,000 hours for the 19 participants].

When asked specifically about medication history taking, 9 students reporting having no prior experience (47.4%), 10 reported having some prior experience (52.6%), and no students reported having significant experience prior to the SMART program. There were no significant differences between the 2 cohorts for these variables.

Students completed 83 medication histories. On average, students completed 1.9 (0.6) medication histories per shift (range 1-3). Nineteen of the immersed students completed the preSMART and postSMART surveys (100% response rate). Cronbach alpha for the self-efficacy survey items was 0.94. As shown in Table 1, a Wilcoxon signed-rank test revealed a significant increase in: student self-efficacy associated with reviewing and synthesizing information from a medical record and other sources to develop an initial medication list ($p=0.002$); describing the purpose of the medication history interview to a patient ($p=0.048$); conducting a complete medication history ($p=0.012$); identifying potential medication-related problems ($p=0.024$); and communicating the completed medication history to a pharmacist ($p=0.003$).

A Mann-Whitney U test comparing the postSMART survey responses for the 2 cohorts found a significant difference in self-efficacy between groups for documenting a medication history in the medical record ($p=0.022$), with cohort 2 indicating higher self-efficacy for this task.

Table 1. Student Self-Efficacy with Medication History Acquisition Prior to and Following Participation in the SMART Program (N=19)

How certain are you that you can. . .?[a]	Premedian, (Range)	Postmedian, (Range)	*p* value
Review and synthesize information from a medical record and other sources to develop initial medication list	8, (4-10)	9, (6-10)	0.002
Describe the purpose of the medication history interview to a patient	8, (5-10)	9, (6-10)	0.048
Conduct a complete medication history	8, (2-10)	9, (5-10)	0.012
Assess patient understanding of his/her medication regimen	8, (4-10)	8, (3-10)	0.276
Identify social and behavioral factors that may influence medication use	7, (4-9)	7, (3-10)	0.222
Identify potential medication-related problems	6, (2-9)	7, (2-9)	0.024
Use empathy in interaction with a patient	9, (6-10)	9.5, (6-10)	0.391
Respond to patient questions and/or concerns	7, (4-10)	8, (4-10)	0.092
Communicate the completed medication history to a pharmacist	8.5, (2-10)	9, (6-10)	0.003
Document a medication history in the medical record	7, (0-10)	9, (1-10)	0.052
Provide assistance to those delivering care in a hospital setting	8, (2-10)	9, (3-10)	0.150

SMART=Student Medication and Reconciliation Team

Wilcoxon signed-rank test used to compare pre/postSMART survey responses

[a] Each item measured on a scale from 0 (cannot do at all) to 10 (highly certain can do)

This may be a maturation effect, as cohort 2 engaged in the program during the spring semester following cohort 1 and may have been exposed to documentation as a part of other activities. Significant differences in self-efficacy were not found between the 2 cohorts for any other items. There were no differences in the postsurvey responses based on demographics or prior experience.

Table 2 details student responses to survey items that evaluated student experiences in and perceptions of the SMART program. Cronbach alpha for the postsurvey items was 0.93. On average, students agreed or strongly agreed that the program provided important opportunities for student development. For example, students agreed that the SMART program provided opportunities to better understand other peoples' perspectives [4.4 (0.6)] and to combine ideas from different courses and experiences [4.3 (0.6)]. Students also indicated that the SMART program contributed to development of key skills, including

Table 2. Student Experiences In and Perceptions of the SMART Program (N=19)

Survey Item[a]	Mean (SD)
The SMART program provided opportunities to:	
expand my understanding of a pharmacists' role in health care	4.3 (0.9)
combine ideas from different courses and experiences	4.3 (0.6)
connect my experiences and learning to health care problems or issues	4.3 (0.8)
better understand other peoples' perspectives	4.4 (0.6)
examine my views on a health care issue	3.9 (0.9)
learning something that challenged my understanding of a concept	4.2 (0.9)
tackle and resolve problems	4.2 (0.7)
better understand complex health care problems	3.9 (0.9)
The SMART program contributed to my ability to:	
communicate medical information clearly and effectively	4.3 (0.5)
think critically and analytically	4.1 (0.9)
memorize and recall drug information	4.1 (0.8)
synthesize and analyze drug and health information	4.2 (0.7)
function as a member of the health care team	4.2 (0.9)
Overall program evaluation	
I am confident in my ability to apply knowledge and skills developed in the SMART program	4.3 (0.7)
I was satisfied with the scheduling of my SMART sessions	3.7 (0.9)
I was able to balance the workload of SMART with academic responsibilities	4.4 (0.8)
The SMART program enhanced my learning in pharmacy school to date	4.2 (0.6)

SMART=Student Medication and Reconciliation Team

[a] Each item measured on a Likert scale from 1 (strongly disagree) to 5 (strongly agree)

communicating medical information clearly and effectively [4.3 (0.5)] and functioning as a member of the health care team [4.2 (0.9)]. Overall program evaluation questions indicated that students believed the program enhanced their learning in pharmacy school to date [4.2 (0.6)]. The lowest rated items on the survey included satisfaction with scheduling [3.7 (0.8)].

Thematic coding was used to identify 3 overarching themes in the reflection statements provided by student participants following SMART shifts: (1) developing strategies for practice; (2) appreciating the roles pharmacists play in health care; and (3) appreciating the complexity of real-world practice. Developing strategies for practice included preparing for interactions with patients, using effective communication for engagement with multiple stakeholders, and adapting to a dynamic environment that can include challenging patients and/or unexpected situations. While multiple students reflected on the nervousness they felt during their initial patient interactions, they also noted the importance of preparation and repetition as strategies for overcoming these new and challenging situations. As one student described, "Tonight I learned that finding connections with patients really helps with retrieving pertinent info."

Students also noted the multiple roles pharmacists play in patient care, including clinical investigator, medication expert/specialist, and communicator. For example, one student noted "My experiences in [the] SMART program taught me about various avenues pharmacists can be utilized as drug experts in optimizing patient's drug regimen." This theme, understanding the role of the pharmacist, is supported by the survey findings (Table 2), in which students agreed [4.3 (0.9)] that "The SMART program provided opportunities to expand my understanding of a pharmacists' role in health care."

Students most frequently commented on the complexities of real-world practice and how this context differed from the classroom. These reflections included realizing the limitations of the classroom in preparing students for practice, encountering patient variability, and navigating the organization (eg, computer systems, institutional procedures and processes, reconciling information). As one student commented, "I also realized that [optimizing the patients drug regimen] is not an easy task to perform, considering so many people have to come together to fit the puzzle together." In general, student reflection statements indicated that students gained an appreciation for pharmacists and the pharmacy workplace while developing critical professional skills and strategies. The results from this analysis triangulate the survey results and indicate that, overall, SMART experiences contributed to student professional development.

DISCUSSION

Numerous calls for reform in health professions education posit the merits of providing students with early clinical experience to promote student development.[1,2,16-18] Examining how students experience early clinical experiences and engage in direct patient care is imperative for understanding the impact of this approach on pharmacy-based experiential education. This study demonstrated the impact of early clinical experiences on second-year student pharmacists in medication history acquisition at an academic medical center. Students gained an appreciation for pharmacists and the workplace while developing critical professional skills, self-efficacy, and strategies for practice.

These findings support other studies that reflect positive experiences and outcomes associated with early experiential learning opportunities involving direct patient care.[8,16,18-20] The Carnegie Foundation for the Advancement of Teaching, for example, recommends integrating formal learning with clinical experience and "providing earlier opportunities for students to spend time with patients and families, physicians, and other health care professionals in real clinical settings" based on findings that these experiences can cultivate a rich foundation for contextualizing learning, revealing patient realities, and expanding student concepts of the health care system.[16] Qualitative analysis of journal essays from second-year Mayo Medical School students engaged in patient interviews and examinations on an internal medicine or related subspecialty unit demonstrated student development associated with relationship building, contextualized learning, and professional identity development.[18] Our analysis of the SMART program revealed an increase in self-efficacy associated with multiple tasks, perceived development of key knowledge and skills, and an appreciation for the complexities of real-world practice. The qualitative findings triangulate these results, suggesting taking medication histories in an academic medical center facilitates learning through active participation in direct patient care.

Self-efficacy and identity development are critical to prepare students for the changing face of pharmacy amid ongoing challenges in twenty-first century health care.[12] Results from the survey and the reflective statements demonstrate that the SMART program facilitated student development associated with the multiple vectors of Chickering's Identity Development Theory—namely, developing competence, moving through autonomy toward interdependence, developing mature interpersonal relationships, and establishing identity.[13] As an example, multiple students disclosed feeling nervous or overwhelmed

during the first shift, attributed to the new tasks and environment in which they were immersed. However, students also reflected on the importance of learning new skills and developing personal approaches to becoming self-sufficient and confident in the tasks at hand. Survey results also indicate that early clinical experience may facilitate identity development along these vectors, as students indicated that SMART participation contributed to their ability to communicate medical information effectively, function as a member of the health care team, and better understand other people's perspectives.

This pilot supports the concept that early engagement in direct patient care within the pharmacy practice setting can benefit students and provide insights into practice. This type of engagement can be accomplished outside the curricular structure or as part of an early practice experience (ie, IPPEs). While exposure is currently proposed in the 2016 ACPE Standards, (eg, Standard 12.5 states, "IPPEs expose students to common contemporary U.S. practice models, including interprofessional practice involving shared patient care decision-making, professional ethics and expected behaviors, and direct patient care activities. IPPEs are structured and sequenced to intentionally develop in students a clear understanding of what constitutes exemplary pharmacy practice in the U.S. prior to beginning APPE"),[21] our study supports the value of moving beyond exposure and actively engaging students with patients early in the curriculum.

Based on the results of this pilot, active engagement in direct patient care is an important mechanism for student pharmacist development. Yorra et al also reported the benefits of engaging students in early and noncurricular practice experiences, specifically noting improved student self-efficacy.[22] Further, in a recent national survey of nearly 400 pharmacy directors, only 30% of respondents indicated student pharmacists were involved with transitions of care activities like medication histories and reconciliation, indicating that opportunities to integrate student pharmacists into models of care exist.[23] This model is also consistent with objectives for the PPMI, which highlight engaging students in mutually beneficial practice experiences.[4,24]

As with any collaborative partnership, creating a sustainable, reproducible, and manageable early clinical program requires adaptation and adjustments. Based on the experiences and feedback from students, a number of new strategies will be used to enhance student learning in future iterations of this program. The first cohort of students, for example, made it apparent that better scheduling was warranted. Students were randomly assigned to shifts, which appeared to contribute to a high number of scheduling conflicts once the program launched. Therefore, students in the second cohort were asked to identify conflict dates and then approve the final schedule prior to launch.

Program coordinators also took the school's examination schedule into account in an effort to reduce stress and conflicts associated with balancing the program with any high-stakes academic assignments. Despite best efforts to eliminate scheduling conflicts, there were still a number of missed shifts. Because of the voluntary nature of this pilot study and the manner in which students were recruited, some students may have failed to appreciate the commitment that they were making to patient care. Although student participation in this pilot study was voluntary per IRB stipulations, subsequent offerings of the program will consider integrating a system of accountability to reduce missed shifts.

In addition to scheduling, students completed only 1-3 medication histories per shift. Since the first shift for each student included an orientation to the hospital and services, there was limited time on first shifts to complete medication histories. On subsequent shifts, the process was time-intensive and designed to lead early learners through a standardized medication history process in a hospital environment with limited down time. As such, time was required for students to review and synthesize information about the patient from the medical record before interviewing the patient, to call each of the patients' outpatient pharmacy or outside facilities to obtain verification of the medication history, to conduct the comprehensive history interview with the patient, to prepare to meet with a pharmacy preceptor and present the patient, to develop an assessment and plan in collaboration with the pharmacist preceptor, and to contact other providers to get changes made and provide medication history documentation for the medical record.

For early learners, learning and implementing this process took time and offering more than 3 shifts may have enabled students to improve their efficiency. In addition, there were occasional shifts when patients were off the floor for various reasons (eg, to have diagnostic tests), and students worked until all medication histories were completed or the 5-hour shift ended. Our findings also suggest that augmenting or expanding SMART program orientation may facilitate student acclimation to the organization and reduce initial anxiety associated with the tasks and work environment.

While benefits of the SMART program are apparent, there are several limitations worth noting. First, the single institution sample limits generalizability of the results. Early clinical experiences are likely to vary as a function of the organization in which students are immersed, of the patient population encountered, of the curriculum in which they enroll, and of the year in which they participate. In

addition, this pilot study included a small, randomly selected sample of 22 students from volunteers, which may introduce some selection bias. Further, because of time limitations, students were assigned to complete only 3 shifts and some students did not complete all 3 shifts, leaving it unclear how additional opportunities may have contributed to student development. Despite these limitations, the robustness of the data provides a compelling picture of engaged and meaningful learning experiences for second-year student pharmacists that support other early clinical experience research.[16,18-20]

The SMART program has raised awareness at the UNC Eshelman School of Pharmacy and UNC Medical Center about the importance of providing student pharmacists with real-world experiences earlier in the curriculum. Early immersion of student pharmacists in the delivery of patient-centered care is a central tenet of our curriculum transformation model,[1] and the outcomes of this program lead us to conclude that early clinical experiences can enhance the educational training of student pharmacists, as recommended by the PPMI Summit.[4] The results of this study support scaling the program, and discussions about expansion and sustainability of this program are ongoing.

The challenges associated with scaling this program to the student body include capacity, scheduling, and context. However, while medication history taking may be scalable over more shifts at this pharmacy department, across comparable services, or to similar health care systems, early engagement in direct patient care could take many forms depending on the organization, service, patient population, and context in which students are immersed. In addition to scaling this program to an IPPE, which will teach medication history taking as a key component of the consistent patient care process conducted by pharmacists, additional opportunities and programs that examine student outcomes associated with engagement in direct patient care are being developed.

SUMMARY

The SMART program was developed to provide student pharmacists with early clinical experiences while meeting the patient care needs of the academic medical center. In general, results from this study indicate that students gained an appreciation for pharmacists and the workplace while developing critical professional skills, self-efficacy, and strategies for practice. The results demonstrate that early clinical experience in medication history acquisition at an academic medical center is both feasible and beneficial. Subsequent offerings of the program will consider improvements in training and scheduling.

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REFERENCES

1. Roth MT, Mumper RJ, Singleton SF, et al. A renaissance in pharmacy education at the University of North Carolina at Chapel Hill. *NC Med J.* 2014;75(1):48-52.
2. Speedie MK, Baldwin JN, Carter RA, Raehl CL, Yanchick VA, Maine LL. Cultivating "habits of mind" in the scholarly pharmacy clinician: report of the 2011-12 Argus Commission. *Am J Pharm Educ.* 2012;76(6):S3.
3. Ashby DM, Harvey AK. Whitney Award lecture: permission granted. *Am J Health-Sys Pharm.* 2011; 68:1497-1504.
4. The consensus of the Pharmacy Practice Model Summit. *Am J Health-Syst Pharm.* 2011; 68:1148-1504.
5. Mersfelder T, Bickel R. Inpatient medication history verification by student pharmacists. *Am J of Health-Sys Pharm.* 2008;65:2273-2275.
6. Padiyara R. Student pharmacists and medication reconciliation upon hospital admission: proposing a way to meet ASHP 2015 objective 1.1. *J Am Pharm Assoc.* 2008;48:701.
7. Walker P, et al. An advanced pharmacy practice experience in transitional care. *Am J Pharm Educ.* 2010;74:1-2.
8. Walker P, Kinsey KS, Kraft MD, Mason NA, Clark JS. Improving student education and patient care through an innovative introductory pharmacy practice experience. *Am J Health-Sys Pharm.* 2011;68:655-660.
9. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree. Accreditation Council for Pharmacy Education. 2011. https://www.acpe-accredit.org/pdf/FinalS2007Guidelines2.0.pdf. Accessed October 20, 2014.
10. Dienstag JL. Evolution of the new pathway curriculum at Harvard Medical School. *Perspect Biol Med.* 2011;54(1):36-54.
11. Kolb D. Experiential Learning: Experience as The Source of Learning and Development. Englewood Cliffs, New Jersey: Prentice Hall; 1984.
12. Duncan-Hewitt W, Austin Z. Pharmacy schools as expert communities of practice? A proposal to radically restructure pharmacy education to optimize learning. *Am J Pharm Educ.* 2005; 69(3):Article 54.
13. Chickering AW, Reisser L. Education and Identity (2nd ed.). San Francisco, CA: Jossey-Bass; 1993.
14. Evans NJ, Forney DS, Guido-DiBrito F. Student Development in College: Theory, Research, and Practice (1st ed). San Francisco: Jossey-Bass; 2005.

15. Bandura, A. Self-Efficacy Beliefs of Adolescents. Information Age Publishing; 2006.
16. Irby DM, Cooke M, O'Brien BC. Calls for reform in medical education by the Carnegie Foundation for the Advancement of Teaching: 1910 and 2010. *Acad Med.* 2010;85:220-227.
17. Educating Doctors to Provide High Quality Medical Care: A Vision for Medical Education in the United States. Report of the Ad Hoc Committee of Deans. Association of American Medical Colleges. http://med.fsu.edu/userfiles/file/FacultyDevelopment_AAMC_Report_Educating_Doctors.pdf. Accessed October 20, 2014.
18. Dyrbye LN, Harris I, Rohren CH. Early clinical experiences from students' perspectives: A qualitative study of narratives. *Acad Med.* 2005; 82(10): 979-988.
19. Rooks L, Watson RT, Harris JO. A primary care preceptorship for first-year medical students coordinated by an Area Health Education Center program: A six-year review. *Acad Med.* 2000;76(5):489-492.
20. Lam TP, Irwin M, Chow LW, Chan P. Early introduction of clinical skills teaching in a medical curriculum – factors affecting students' learning. *Med Educ.* 2002;36:233-240.
21. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree: Draft standards 2016. Accreditation Council for Pharmacy Education. 2014. https://www.acpe-accredit.org/pdf/Standards2016DRAFTv60FIRSTRELEASEVERSION.pdf. Accessed October 20, 2014.
22. Yorra ML. Self-efficacy and self-esteem in third-year pharmacy students. *Am J Pharm Educ.* 2014;78(7):Article 134.
23. Kern KA, Kalus JS, Bush C, Chen D, Szandzik EG, Haque NZ. Variations in pharmacy-based transition-of-care activities in the United States: A national survey. *Am J Health-Syst Pharm.* 2014; 71(8):648-656.
24. Khandoobhai A, Weber RJ. Issues facing pharmacy leaders in 2014: Suggestions for pharmacy strategic planning. *Hosp Pharm.* 2014;49(3):295-302. doi: 10.1310/hpj4903-295.