Title

Exploring Multiple Perspectives on Pharmacy Students' Readiness for Advanced Pharmacy Practice Experiences

Journal

American Journal of Pharmaceutical Education, 85(5)

ISSN

0002-9459

Authors

Gruenberg, Katherine
Hsia, Stephanie
O'Brien, Bridget
et al.

Publication Date

2021-05-01

DOI

10.5688/ajpe8358

Peer reviewed

QUALITATIVE RESEARCH

Exploring Multiple Perspectives on Pharmacy Students' Readiness for Advanced Pharmacy Practice Experiences

Katherine Gruenberg, PharmD, MAEd,[a] Stephanie Hsia, PharmD,[a] Bridget O'Brien, PhD,[b] Patricia O'Sullivan, EdD[b]

[a] University of California San Francisco, School of Pharmacy, San Francisco, California
[b] University of California San Francisco, School of Medicine, San Francisco, California

Submitted August 22, 2020; accepted January 29, 2021; published May 2021.

Objective. This study aimed to enrich the Academy's understanding of pharmacy students' readiness for advanced pharmacy practice experiences (APPEs) by exploring the perspectives of three primary stakeholders: APPE students, APPE preceptors, and APPE faculty site directors.

Methods. A descriptive qualitative study of APPE readiness was conducted using workplace learning as a guiding conceptual framework. Data were collected between March and September 2019 through semi-structured focus groups and interviews with students (five groups), preceptors (four groups), and faculty site directors (one group, two individual interviews). The data were analyzed using directed content analysis.

Results. Participants described APPE readiness as a multifaceted construct comprised of four themes: learner characteristics, participation in workplace activities, relationship-building, and workplace practices to orient and support students. While all participants addressed each category, faculty site directors and preceptors tended to focus on learner characteristics, while students emphasized their participation in the workplace and relationship building.

Conclusion. Knowledge is widely recognized as a requirement for APPE readiness. This study identified learner characteristics, workplace participation, and relational skills as additional requirements. Some of these criteria are challenging to assess prior to APPEs, which makes orienting students both prior to and at the start of APPEs particularly important to support readiness. Thus, a comprehensive review of APPE readiness might also include assessing the readiness of workplaces, administrators, and preceptors for APPE students.

Keywords: achievement, success, academic, education, pharmacy

INTRODUCTION

Advanced pharmacy practice experiences (APPEs) are high-stakes learning experiences where students conduct patient care tasks under the supervision of a pharmacist. Given the level of responsibility entrusted to APPE students and the requirement for degree attainment, the Accreditation Council for Pharmacy Education (ACPE) requires assessing student competence in the following areas prior to APPEs: ". . .professional knowledge, knowledge application, patient and population-based care, medication therapy management skills, and the attitudes important to success in the advanced experiential program."[1] These recommendations represent the minimum requirements that programs must have to maintain accreditation. However, pharmacy schools may choose to expand or elaborate on specific criteria that align with their programmatic goals.

The pharmacy education literature focuses primarily on knowledge and skill-based indicators of students' APPE readiness. Researchers have studied pre-pharmacy and pharmacy grade point average (GPA),[2,3] comprehensive assessments,[4-7] Pharmacy Curriculum Outcomes Assessment (PCOA) performance,[3,8] simulated patient encounters,[9,10] objective structured clinical exams (OSCEs),[4-6,11,12] introductory pharmacy practice experiences (IPPEs),[13,14] and successful completion of APPE preparatory courses[5,15,16] as measures of APPE readiness. These studies indicate that APPE readiness is currently conceptualized as an assessment of student achievement prior to APPEs. By framing APPE readiness this way, we focused our attention on measurable knowledge and skills as markers of "readiness." Students must also possess

Corresponding Author: Katherine Gruenberg, University of California San Francisco, School of Pharmacy, 533 Parnassus Ave., Ste. U-585 S, San Francisco, CA 94143. Tel: 415-514-9324. Email: Katherine.Gruenberg@UCSF.edu

social and behavioral characteristics to succeed in the workplace,[1] but these are challenging to measure outside of the APPE setting.

Workplace learning offers a useful theoretical framework for conceptualizing readiness as a holistic construct that includes social and behavioral characteristics as well as knowledge and skills that students require to successfully learn in the workplace.[17-21] This theory describes on-the-job learning resulting from daily work and interpersonal interactions. Students advance their learning by completing supervised, goal-directed tasks with progressively more accountability and complexity.[17] Billet describes the key components of workplace learning as: learner characteristics, workplace goals and activities, and relationships with people in the workplace.[21] Learner characteristics include the knowledge, skills, experiences, attitudes, values, interests, intentions, and emotions that learners bring to the workplace.[21] Students must also understand how their role integrates with workplace goals and activities to engage in effective workplace learning and practice. Finally, students observation and conversation with those in the workplace also supports achievement of workplace goals and promotes learning. Applying workplace learning to APPE readiness suggests that students need to possess key learner characteristics, understand their role within workplace goals and activities, and demonstrate appropriate interpersonal skills to be prepared for APPEs. Assessment of APPE readiness should then involve assessment within these three domains.

Our understanding of APPE readiness focuses narrowly on knowledge and skill-based abilities, and may benefit from considering additional components from workplace learning when assessing readiness. Additionally, we see opportunities to enrich our understanding of noncognitive attributes potentially associated with APPE readiness by studying the transition to APPEs experienced by students and overseen by preceptors and faculty.

We wanted to develop a holistic understanding of APPE readiness that aligned with workplace learning by eliciting the perspectives of three primary stakeholders: students participating in the APPE curriculum (students), pharmacists who oversee students on APPEs (preceptors), and pharmacy faculty who oversee the APPE experience (faculty site directors).

METHODS

We conducted a descriptive qualitative study[22] of APPE readiness using directed content analysis.[23] We chose focus groups as our primary method to gather both unique and shared perspectives within our stakeholder groups.[24] We used a purposive sampling strategy to identify the stakeholder groups best suited to provide information about APPE readiness.[25-27] One stakeholder group consisted of students we recruited from the three APPE sites that comprise the majority of APPE experiences. Eligible students had completed at least one direct patient care APPE (eg, hospital, community pharmacy, or ambulatory care) during the study period. Another stakeholder group included pharmacist preceptors who had to have at least three years of precepting experience, a faculty appointment, or involvement in the University of California San Francisco (UCSF) Master Preceptor Program (MPP) (a one-year professional development program focused on precepting skills) to be eligible to participate. A third stakeholder group included APPE site directors who were UCSF School of Pharmacy faculty members. Faculty site directors assigned student APPEs across care settings (eg, community, ambulatory, hospital pharmacy), conducted APPE orientations, reconciled student and preceptor issues, monitored APPE student progress, and planned APPE student remediations within their geographic region.

All eligible students (n=104), preceptors (n=51), and faculty site directors (n=6) received an e-mail invitation to participate in the focus groups. Preceptors who agreed to participate were placed in focus groups based on their eligibility characteristics (eg, all MPP participants participated in the same focus group). We grouped student participants based on the geographic region in which their APPE site was located. All APPE faculty site directors agreed to participate. Four APPE faculty site directors, who had each overseen one of the regional sites, comprised one focus group. We conducted a one-on-one interview with the fifth APPE faculty site director because her hiring occurred after the faculty site director focus group had occurred. We also interviewed the sixth APPE faculty site director one-on-one to elicit her insights without concerns for how her leadership position as Associate Dean of Experiential Education and Professional Development might affect focus group discussions.[28] The UCSF Institutional Review Board reviewed this study and deemed it exempt.

Using workplace learning as a guiding framework,[21] we developed semi-structured focus group and interview guides to investigate participants' experiences and understanding of APPE readiness. We invited students to describe their overall experience with starting APPEs, ie, how prepared they felt, what they thought personally helped them succeed during APPEs, how they interacted with others in the workplace, and their role during their first direct patient care APPE. We asked preceptors and APPE faculty site directors to describe their general expectations for students during their first week of an APPE and then probed for specific examples of the knowledge,

skills, and/or characteristics they expected students to have. To distinguish between pre-APPE readiness and the transition to APPEs, we also asked preceptors and APPE faculty site directors to identify key skills or concepts they expect a student to learn *during* the APPE. The APPE faculty site directors and preceptors were also asked to characterize students who they felt were not ready to start APPEs. We piloted the scripts with a focus group of three students and a focus group of four faculty to determine the clarity of questions and utility of responses. We also created brief questionnaires to collect information about the APPE clinical practice setting and geographic site. Two investigators conducted all focus groups and interviews from March to September 2019. These investigators were acquainted with some of the study participants though their roles as junior faculty members in the School of Pharmacy. The sessions were audio recorded, transcribed using Rev.com, and coded in Dedoose.com. Consistent with purposive sampling techniques, we based the number of focus groups on the sufficiency of data collected from each group and our ability to identify consistent patterns or themes in our data.[27]

Workplace learning guided the development of the coding scheme.[21] One investigator read through the transcripts and created codes either aligning with or distinct from workplace learning. Two investigators then independently coded the transcripts using the initial codebook and met a total of three times to review coding, reconcile discrepant coding, and discuss new or redundant codes. These investigators continued to conduct focus groups and apply codes to the transcripts until sufficient information was gathered to support the observed themes.[27] The investigators drew upon their personal experiences as preceptors and teaching faculty over approximately two years, as well as their own experience as APPE students, to guide interpretation of the data. To check if the investigators' interpretation of the data resonated with the participants' experiences, the investigators conducted member checks, a qualitative research technique to enhance the credibility of researchers' interpretations, by circulating and obtaining feedback from all study participants on an initial APPE readiness figure constructed from analyzed data.[25,26,29] The participants who provided feedback confirmed the investigators' findings.

RESULTS

We conducted five student focus groups, four preceptor focus groups, one faculty site director focus group, and two faculty site director interviews. Participants represented hospital, ambulatory, and community practice settings across several geographic sites (Table 1). Participants described APPE readiness as a multifaceted construct reflecting the three workplace learning categories: Learner Characteristics, Participation in Workplace Activities, and Relationship-Building. Participants also identified Practices to Orient and Support Students that influence APPE readiness (Figure 1). All participant groups addressed each category and provided similar descriptions. When comparing responses across stakeholder groups, faculty site directors and preceptors tended to elaborate more on learner characteristics, whereas students focused on their participation in workplace activities and relationship-building with preceptors. Representative quotes from each theme are provided in Table 2.

We identified two sub-themes within the Learner Characteristics: personal characteristics (eg, attitudes and attributes) and clinical foundations (eg, prior knowledge, skills, and experiences). Participants often described learner characteristics in the context of completing tasks or communicating with others. Personal characteristics, as a subtheme, included qualities such as self-awareness, initiative, confidence, adaptability, and professionalism. Participants described professionalism in terms of punctuality, preparedness, communication, appropriate attire, respect, altruism, engagement, and responsibility. Preceptors and faculty site directors explained that students who lacked these personal characteristics struggled during APPEs. The clinical foundations subtheme referred to students' prior knowledge, skills, and experience. The APPE faculty site directors and preceptors generally expected students to have foundational knowledge in the basic and therapeutics sciences when they started their APPEs, with additional specialized knowledge learned during APPEs. These participant groups also identified prerequisite skills and experiences needed to support APPE readiness, such as navigating an electronic medical record, working up patients, providing patient presentations, and critical thinking. Students described variable levels of confidence in their knowledge and skills at the start of APPEs, but framing APPEs as a learning progression helped some students reassess their expectations of the clinical foundations needed for APPE readiness.

Participation in Workplace Activities, the second theme, encompassed preceptors' and APPE faculty site directors' expectations for how students should engage in the workplace at the beginning of APPEs. Preceptors generally expected students to understand both the APPE student's role and the pharmacist's role in a workplace; students who did not understand these roles or could not successfully take on the responsibilities associated with these roles were described as not ready for APPEs.

Table 1. Background Information on Participants in a Study Exploring Pharmacy Students' Readiness for the Transition to Advanced Pharmacy Practice Experiences

Participants	Total Number of Focus Groups	Total Number of Participants	Location of APPE Rotation or Site Administration, N (%)	Type of APPE Patient Care Setting,[a] N (%)
Students	5	24	SFBA 13 (54) Davis/Sac 6 (25) LA/OC 5 (21)	Hospital 12 (50) Ambulatory Care 7 (29) Community 5 (21)
Preceptors	4	22	SFBA 15 (68) Davis/Sac 7 (32)	Hospital 14 (64) Ambulatory Care 6 (27) Community 0 (0) Transitions of Care 2 (9)
Faculty Site Directors	1 focus group 2 interviews	6	SFBA 2 (33) Davis/Sac 1 (17) Fresno 1 (17) LA/OC 2 (33)	N/A

Abbreviations: SF BA=San Francisco Bay Area, LA/OC=Los Angeles/Orange County, Davis/Sac=Davis/Sacramento
[a] For pharmacy students, this represents the first direct patient-care APPE setting; for preceptors, this represents the APPE practice setting where they precept students

Preceptors noted several key personal characteristics (eg, initiative, responsibility, self-awareness) often facilitated successful participation in the workplace. Because their roles differed by clinical setting, students described variable experiences participating in the workplace at the start of APPEs. Some students understood and assumed their role right away, leading to active participation in the workplace. Other students found it difficult to recognize their role at the start of APPEs, which diminished their feelings of readiness.

Relationship-Building, the third theme, described the ability of pharmacy students to develop and manage relationships with patients, health care providers, and preceptors during APPEs. Learner characteristics can support these relationships, but the focus of this theme was on the communication and interpersonal skills that students needed for successful connections. Within the relationship-building theme, participants described APPE-ready students as those who could successfully communicate with patients, other health professionals, and preceptors to support a productive working environment. While students generally demonstrated appropriate patient communication skills, all three stakeholder groups mentioned that students need more practice communicating with health professionals from other disciplines. Preceptors and students identified certain communication skills, such as framing and timing, that would help students be more prepared for these encounters. Participants also explained that developing supportive relationships, managing conflict, and negotiating expectations were important components of relationship-building. Students mentioned several positive examples of supportive workplace relationships developed through layered and peer learning. However, students and faculty site directors also described strained workplace relationships resulting from misaligned expectations and differing personalities. Faculty site directors identified a student's ability to communicate expectations and challenges with their preceptor as a necessary component of APPE readiness for relationship-building.

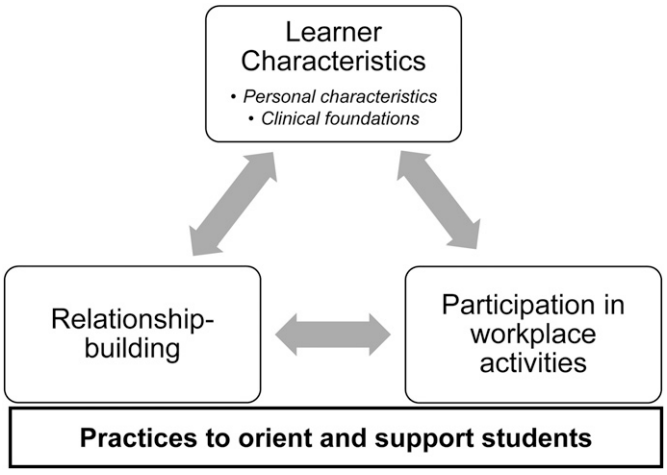

Figure 1. Conceptualization of Doctor of Pharmacy Students' Readiness for Advanced Pharmacy Practice Experience Adapted from Workplace Learning Theory

As participants described the experiences above, they emphasized the importance of Practices to Orient and Support Students, which reflected the fourth theme identified, to promote APPE readiness. Some students felt their orientation was insufficient and that they needed more support, while others found the oritentation beneficial to their onboarding to APPEs.

Table 2. Representative Participants' Quotes and Identified Themes and in a Study Exploring Pharmacy Students' Readiness for the Transition to Advanced Pharmacy Practice Experiences

Theme **Subtheme**	**Description of Theme or Subtheme**	**Participant Quotes**
Learner Characteristics		
Personal Characteristics	Personal qualities needed for APPE readiness	"Some people will have that challenge, and they'll fail, and they'll pick themselves up. . .[some] don't understand why they're not doing well because they either lack the ability to self-reflect, they lack the ability to take constructive feedback and actually apply it and utilize it to grow." (Site director) ". . .having initiative and being proactive. So, a student coming to me, as a preceptor, with a plan already in place versus just asking me, 'What do I do?'. . .or. . .'I don't know if I had learned this [disease] in school. . .can we talk about this?' You know, read up about it, let's plan to talk about it a couple of days later..." (Preceptor FG1)
Clinical Foundations	Prerequisite knowledge, skills, or experiences needed for APPE readiness	"Anything outside of normal we're going to focus on [during] the rotation. But yes, . . .mechanism of action, drug side effects, monitoring parameters, disease states are considered kind of entry level to their education." (Preceptor FG4) ". . .knowing that you're not going to know everything the first day and especially your first week and being okay with it. Knowing if I know more today than yesterday and taking those small steps. . .is a big part of being ready for rotations." (Student FG5)
Participation in Workplace Activities	Preceptor and site director expectations for students' participation in the workplace	"I'm amazed at the number of students who come in and don't understand what a pharmacist does. When you ask them about their responsibilities, they should know. . ." (Preceptor FG1) ". . . knowing their patients is really the prerequisite for everything. If you don't know the patient well, your value is about dramatically diminished." (Preceptor FG4)
	Student experiences participating in APPEs	"I felt like I was fumbling my way around just to figure out. . .what to do in. . . the APPE setting, having acute care medicine as my first rotation. . .'What is my role here really in this setting?' Trying to figure that out and feeling like I wanted to contribute, wanted to be part of the team, but not feeling like I. . .necessarily could at that moment. . ." (Student FG4)

(*Continued*)

Table 2. (*Continued*)

Theme Subtheme	Description of Theme or Subtheme	Participant Quotes
Relationship-Building	Student ability to develop and manage relationships with patients, colleagues, and health professionals	"...knowing how to go about communicating with different disciplines and knowing when to approach that individual... [during] IPPE they observe, but they haven't done it yet...(Site Director) "I had to try to be a certain way for the different preceptors or even different members of the team...or different doctors...almost like a chameleon a little bit..." (Student FG4)
Practices to Orient and Support Students	Positive Practices to Orient and Support Students	"They've [preceptors] been really supportive and understanding that this is our first rotation... so understanding that we have a lot of room to grow and they start with the shadowing. And then they slowly let go, and then suddenly you're on your own, but at a good pace." (Student FG2)
	Practices Addressing Expectations for Learner Characteristics	"...I review professionalism, but it's not because...they don't know what professional behavior is, but it's more as a reminder of, 'You've chosen a service-oriented profession'..." (Site director)
	Practices Addressing Expectations for Participation in the Workplace	"Try and let them [students] know that you're not going to rack up a lot of wins for yourself at the beginning. You're going to sit through rounds many days and not say anything and that's fine... On this rotation that's fine...because you don't have the experience yet." (Preceptor FG3)
	Practices Addressing Expectations for Relationship-Building	"... in the surgical setting, there's a little bit more of a hierarchy that maybe if they weren't exposed to that setting during their IPPE, they may not realize how important timing and framing is in that type of setting and to really kind of follow the chain of commands per se." (Preceptor FG2)

Abbreviations: FG=focus group, APPE=Advanced Pharmacy Practice Experience

Examples included demonstrating activities, discussing roles within the professional workplace, and sequencing tasks to slowly introduce students to more complex responsibilities. Comments on these practices emphasized the shared responsibilities of educators and workplace participants in supporting learner readiness. Several comments within this category also addressed how orienting can support learner characteristics, participation in the workplace, and relationship-building.

DISCUSSION

Students, preceptors, and APPE faculty site directors described themes that broaden our understanding of APPE readiness to include learner characteristics, participation in workplace activities, relationship-building, and practices to orient and support students. The inclusion of multiple stakeholder groups allowed us to compare and contrast perspectives across stakeholders to identify areas of APPE readiness requiring further consideration. Additionally, including stakeholders who experience the

workplace side of APPE readiness allowed us to think more holistically about aspects of readiness beyond the pre-APPE didactic curriculum. While our participants' comments support the importance of prerequisite knowledge and skills, they also highlight other considerations that could be built into a readiness curriculum, including awareness of personal characteristics valued in the workplace, improving students' understanding of pharmacist and APPE student roles to facilitate workplace participation, and practicing communication skills to enhance workplace relationships. Importantly, orienting practices, both in the pre-APPE and APPE curriculum, must be incorporated to facilitate students' transition to APPEs. Without appropriate orientation both prior to APPEs and at the start of APPEs highlighting these three domains, students' readiness for APPEs is diminished, regardless of their knowledge, skills, and disposition.

Development and assessment of learner characteristics (eg, attitudes and dispositions) are currently lacking in the APPE readiness literature. This may be partly due to uncertainty around which characteristics to focus on, how to accurately develop and assess them, and the appropriate level of achievement prior to APPEs. A starting point is purposeful development of characteristics such as self-awareness, initiative, confidence, engagement, perseverance, adaptability, and professionalism within the pre-APPE curriculum. Several medical schools offer transitional clerkship courses to develop key student attitudes, along with knowledge and skills, prior to clinical clerkships.[30-32] Some pharmacy schools have developed situational judgement tests to assess for certain learner characteristics in pharmacy students.[33-35] Despite the appeal, situational judgement tests require significant resources to appropriately develop and it is unclear how to best approach remediation for students who perform poorly on these tests. Thus, how to successfully develop and assess learner characteristics for APPE readiness is an important topic for future research.

Our stakeholders also described different expectations for student participation in workplace activities at the start of APPEs. The adoption and alignment of Core Entrustable Professional Activities (EPAs) across the IPPE and APPE curricula may facilitate APPE readiness for workplace participation by specifying students' roles and responsibilities at the start of APPEs.[36-38] Chen and colleagues identified EPAs that medical students were required to master prior to starting their clerkships, a transition similar to that undergone by pharmacy students starting their APPEs. When applying EPAs towards readiness assessments, Chen and colleagues ". . .recommend that multiple and preferably different types of information sources (eg, faculty evaluation, multisource feedback, standardized patient examinations) be used to gauge progress and that entrustment decisions be based on the input of more than one person or time point (eg, three faculty members recommending entrustment)."[38] Schools of pharmacy can evaluate students for APPE readiness by measuring EPA progress during IPPEs and OSCEs; this information can then be shared with APPE preceptors and students to establish baseline expectations for supervision of APPE workplace tasks.

Participants in our study also described a student's ability to build relationships with patients, health professionals, and preceptors as necessary for APPE readiness. Generally, students described having confidence with patient communication but difficulties with managing interprofessional communication and interpersonal dynamics. This experience is not unique to pharmacy students. Medical and nursing students have also identified social interactions with supervisors and other employees as a significant stressor when starting clinical clerkships.[39-42] To prepare students for these encounters prior to APPEs, students can practice communicating with health care professionals during simulations.[43] Students can also build interprofessional communication skills during IPPE activities, such as taking verbal prescriptions orders from prescribers and communicating medication history discrepancies to providers.

Our study findings also highlight the responsibility that preceptors and APPE faculty site directors have for orienting learners to the expectations, roles, and responsibilities needed to engage successfully in APPEs before and once students arrive at their site. Clarification of roles and responsibilities are expected in workplace learning, where the quality of learning depends on both learner characteristics and guidance by others.[21] Orienting students to key personnel and connecting them to a peer support system may also help students successfully manage relationships with people in the workplace setting.[44] Thus, the learners, preceptors, and those who organize the learning experience all must take ownership for APPE readiness. Because we observed discrepancies in orienting practices, we recommend schools of pharmacy orient students to expectations for learner characteristics, roles and workplace responsibilities, and relationship-building skills prior to entering APPEs. Preceptors should also implement a consistent onboarding process across all APPEs that reinforces the expectations outlined by schools of pharmacy, while also providing students with site-specific information (eg, communication norms). For example, an APPE intake form may help identify preceptor and student roles and responsibilities while providing flexibility for different APPE preceptors. Peters and colleagues designed and provided validity evidence for the Aligning Ideas about

Responsibility (AIR) tool to facilitate conversations about preceptor and medical student expectations of workplace learning. This five-item tool identified expectations and facilitated conversations between students and preceptors about their roles and responsibilities.[45]

Some aspects of APPE readiness highlighted in our study are challenging to accurately assess prior to APPEs. For example, a student's ability to develop relationships with those in the workplace can be difficult to measure. One could argue that IPPE performance serves as a predictor of APPE performance, but our preceptor participants noted that sometimes students do not have such experiences during IPPEs (Table 2). Students also struggled with the idea that they were "APPE ready" but still did not have all the prerequisite knowledge or skills to perform at the level they desired. This suggests that conceptualizing APPE readiness as a single benchmark may not be reflective of the expectations of preceptors and faculty, nor the experiences of APPE students. Future studies may consider exploring how the use of pre-APPE readiness assessments along with assessments during the transition to APPEs support workplace learning.

The sites included in our study primarily represented academic medical centers that may underrepresent service to certain patient populations, such as bilingual and underserved patients. Consequently, the need for APPE students to exert cultural humility, a key skill noted by the ACPE Accreditation Standards,[1] may have been mentioned more frequently if these sites had been included. While our sample lacked community pharmacy APPE preceptors, 21% of student participants reflected upon their community APPE experience and two preceptors practiced in transitions of care. We did not sample community pharmacy participants at the advice of our experiential education leadership who noted that acute and ambulatory care preceptors were the ones to most frequently report gaps in APPE readiness. By focusing our preceptor sampling within these practice areas, we may have limited the applicability of these results for community practice. As in all qualitative studies, others who choose to build on the insights from this study should consider the personal experiences of the investigators and the context of the study. Finally, the investigators knew several of the participants, which may have influenced participation in and responses given during some focus groups.

CONCLUSION

This study offers a holistic conceptualization of APPE readiness to use in establishing expectations for pharmacy students and progression criteria within pharmacy curricula. Although the pharmacy literature primarily describes academic performance as a marker for APPE readiness, our findings suggest there are also learner characteristics and relational skills required. Our participants also identified the responsibility of faculty and preceptors to orient students to the APPE setting, and some aspects of APPE readiness that are challenging to assess prior to APPEs. Thus, a comprehensive view of APPE readiness may also include readiness of workplaces, administrators, and preceptors for APPE students.

ACKNOWLEDGMENTS

This research was funded by the Mary Anne Koda-Kimble Seed Award for Innovation, and the UCSF School of Pharmacy Impact of Curriculum Transformation Award.

REFERENCES

1. Accreditation Council of Pharmacy Education. Accreditation standards and key elements for the professional program in pharmacy leading to the doctor of pharmacy degree. https://www.acpe-accredit.org/pdf/Standards2016FINAL.pdf. Published February 2, 2015. Accessed April 27, 2021.
2. Heldenbrand SD, Dayer LE, Martin BC, et al. Advanced pharmacy practice experience evaluation scores are positively associated with multiple-mini interview score, pre-pharmacy GPA and pharmacy GPA. *Am J Pharm Educ*. 2017;82(7):Article 6326. doi: 10.5688/ajpe6326
3. Nyman H, Moorman K, Tak C, Gurgle H, Henchey C, Munger MA. A modeling exercise to identify predictors of student readiness for advanced pharmacy practice experiences. *Am J Pharm Educ*. 2020;84(5):Article 7783. doi:https://doi.org/10.5688/ajpe7783
4. Mészáros K, Barnett MJ, McDonald K, et al. Progress examination for assessing students' readiness for advanced pharmacy practice experiences. *Am J Pharm Educ*. 2009;73(6):Article 109. doi: 10.5688/aj7306109
5. Hirsch AC, Parihar HS. A capstone course with a comprehensive and integrated review of the pharmacy curriculum and student assessment as a preparation for advanced pharmacy practice experiences. *Am J Pharm Educ*. 2014;78(10):Article 192. doi: 10.5688/ajpe7810192
6. Guirguis E, Sourial M, Jackson J, Bonfiglio M, Nornoo A, Maarsingh H. Developing a comprehensive APPE-readiness plan with a focus on skills, attitudes, and behaviors. *Curr Pharm Teach Learn*. 2020;12(4):479-486. doi:10.1016/j.cptl.2019.12.035
7. Culbertson VL. Pharmaceutical care plan examinations to identify students at risk for poor performance in advanced pharmacy practice experiences. *Am J Pharm Educ*. 2008;72(5):Article 111. doi:10.5688/aj7205111
8. Sweet BV, Assemi M, Boyce EG, et al. Characterization of use of the pharmacy curriculum outcomes assessment across accredited colleges of pharmacy. *Am J Pharm Educ*. 2019;83(7):Article 7091. doi:10.5688/ajpe7091
9. Benedict N, Smithburger P, Donihi AC, et al. Blended simulation progress testing for assessment of practice readiness. *Am J Pharm Educ*. 2017;81(1):14. doi:10.5688/ajpe81114
10. Eukel H, Brown W, Fitz A, Frenzel J, Naughton C, Skoy E. Performance-based assessments: simulations to assess APPE readiness and interprofessional readiness. *Am J Pharm Educ*. 2015; 79(5):Article S4. doi:10.5688/ajpe795S4

11. McLaughlin JE, Khanova J, Scolaro K, Rodgers PT, Cox WC. Limited predictive utility of admissions scores and objective structured clinical examinations for APPE performance. *Am J Pharm Educ*. 2015;79(6):Article 84. doi:10.5688/ajpe79684
12. Ragan RE, Virtue DW, Chi SJ. An assessment program using standardized clients to determine student readiness for clinical practice. *Am J Pharm Educ*. 2013;77(1):Article 14. doi:10.5688/ajpe77114
13. Gilliam E, Nuffer W, Thompson M, Vande Griend J. Design and activity evaluation of an Advanced-Introductory Pharmacy Practice Experience (aIPPE) course for assessment of student APPE-readiness. *Curr Pharm Teach Learn*. 2017;9(4):595-604. doi:10.1016/j.cptl.2017.03.028
14. Vyas D, Bhutada NS, Feng X. Patient simulation to demonstrate students' competency in core domain abilities prior to beginning advanced pharmacy practice experiences. *Am J Pharm Educ*. 2012;76(9):Article 176. doi:10.5688/ajpe769176
15. Pittenger AL, Dimitropoulos E, Foag J, Bishop D, Panizza S, Bishop JR. Closing the classroom theory to practice gap by simulating a psychiatric pharmacy practice experience. *Am J Pharm Educ*. 2019;83(10):Article 7276. doi:10.5688/ajpe7276
16. Baumgartner L, Ip EJ, Sasaki-Hill D, Wong T, Israel H, Barnett MJ. Implementation of mock acute care advance pharmacy practice experience simulations and an assessment rubric. *Am J Pharm Educ*. 2019;83(9):Article 7331. doi:10.5688/ajpe7331
17. Billett S. Learning through health care work: premises, contributions and practices. *Med Educ*. 2016;50(1):124-131. doi:10.1111/medu.12848
18. Noble C, Billett S. Learning to prescribe through co-working: junior doctors, pharmacists and consultants. *Med Educ*. 2017;51(4):442-451. doi:10.1111/medu.13227
19. Billett SR. Securing intersubjectivity through interprofessional workplace learning experiences. *J Interprof Care*. 2014;28(3):206-211. doi:10.3109/13561820.2014.890580
20. Billett S. Readiness and learning in health care education. *Clin Teach*. 2015;12(6):367-372. doi:10.1111/tct.12477
21. Billett Stephen. *Learning in the Workplace: Strategies for Effective Practice*. Allen & Unwin; 2001.
22. Kahlke R. Generic qualitative approaches; pitfalls and benefits of methodological mixology. *Int J Qual Methods*. 2014;13(1):37-52. doi:10.1177/160940691401300119
23. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277-1288. doi:10.1177/1049732305276687
24. Stalmeijer RE, Mcnaughton N, Van Mook WNKA. Using focus groups in medical education research: AMEE Guide No. 91. *Med Teach*. 2014;36(11):923-939. doi:10.3109/0142159X.2014.917165
25. Creswell J, Poth C. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. 4th ed. Sage Publications; 2018.
26. Maxwell J. *Qualitative Research Design: An Interactive Approach*. 3rd ed. Sage Publications; 2013.
27. Guest G, Namey E, Mitchell M. Sampling in qualitative research. In: *Collecting Qualitative Data: A Field Manual for Applied Research*. 55 City Road, London: SAGE Publications, Ltd; 2013:41-74. doi:10.4135/9781506374680
28. Patton M. *Qualitative Evaluation and Research Methods*. Sage Publications; 1990.
29. Birt L, Scott S, Cavers D, Campbell C, Walter F. Member checking: a tool to enhance trustworthiness or merely a nod to validation? *Qual Health Res*. 2016;26(13):1802-1811. doi:10.1177/1049732316654870
30. Ryan MS, Feldman M, Bodamer C, Browning J, Brock E, Grossman C. Closing the gap between preclinical and clinical training: impact of a transition-to-clerkship course on medical students' clerkship performance. *Acad Med*. Published online August 2019:1. doi:10.1097/ACM.0000000000002934
31. Poncelet A, O'Brien B. Preparing medical students for clerkships: a descriptive analysis of transition courses: *Acad Med*. 2008;83(5):444-451. doi:10.1097/ACM.0b013e31816be675
32. O'Brien BC, Poncelet AN. Transition to clerkship courses: preparing students to enter the workplace. *Acad Med J Assoc Am Med Coll*. 2010;85(12):1862-1869. doi:10.1097/ACM.0b013e3181fa2353
33. Smith KJ, Flaxman C, Farland MZ, Thomas A, Buring SM, Patterson F. Development and validation of a situational judgement test to assess professionalism. *Am J Pharm Educ*. 2020;84(7):Article 7771. doi:10.5688/ajpe7771
34. Patterson F, Galbraith K, Flaxman C, Kirkpatrick CM. Evaluation of a situational judgement test to develop non-academic skills in pharmacy students. *Am J Pharm Educ*. 2020;84(7):Article 7074. doi:10.5688/ajpe7074
35. Wolcott MD, Lupton-Smith C, Cox WC, McLaughlin JE. A five-minute situational judgment test to assess empathy in first-year student pharmacists. *Am J Pharm Educ*. 2019;83(6):Article 6960. doi:10.5688/ajpe6960
36. Pittenger AL, Chapman SA, Frail CK, Moon JY, Undeberg MR, Orzoff JH. Entrustable professional activities for pharmacy practice. *Am J Pharm Educ*. 2016;80(4):Article 57. doi:10.5688/ajpe80457
37. Haines ST, Pittenger AL, Stolte SK, et al. Core entrustable professional activities for new pharmacy graduates. *Am J Pharm Educ*. 2017;81(1):Article S2. doi:10.5688/ajpe811S2
38. Chen HC, McNamara M, Teherani A, ten Cate O, O'Sullivan P. Developing entrustable professional activities for entry into clerkship. *Acad Med*. 2016;91:247-255. doi:10.1097/ACM.0000000000000988
39. Radcliffe C, Lester H. Perceived stress during undergraduate medical training: a qualitative study. *Med Educ*. 2003;37(1):32-38. doi:10.1046/j.1365-2923.2003.01405.x
40. Thomas J, Jinks A, Jack B. Finessing incivility: the professional socialisation experiences of student nurses' first clinical placement, a grounded theory. *Nurse Educ Today*. 2015;35(12):e4-e9. doi:10.1016/j.nedt.2015.08.022
41. Atherley AE, Hambleton IR, Unwin N, George C, Lashley PM, Taylor CG. Exploring the transition of undergraduate medical students into a clinical clerkship using organizational socialization theory. *Perspect Med Educ*. 2016;5(2):78-87. doi:10.1007/s40037-015-0241-5
42. Sun F-K, Long A, Tseng YS, Huang H-M, You J-H, Chiang C-Y. Undergraduate student nurses' lived experiences of anxiety during their first clinical practicum: A phenomenological study. *Nurse Educ Today*. 2016;37:21-26. doi:10.1016/j.nedt.2015.11.001
43. Kostoff M, Burkhardt C, Winter A, Shrader S. An interprofessional simulation using the SBAR communication tool. *Am J Pharm Educ*. 2016;80(9):Article 157. doi:10.5688/ajpe809157
44. Atherley A, Dolmans D, Hu W, Hegazi I, Alexander S, Teunissen PW. Beyond the struggles: a scoping review on the transition to undergraduate clinical training. *Med Educ*. 2019;53(6):559-570. doi:10.1111/medu.13883
45. Peters S, Clarebout G, Aertgeerts B, et al. Provoking a conversation around students' and supervisors' expectations regarding workplace learning. *Teach Learn Med*. 2020;32(3):282-293. doi:10.1080/10401334.2019.1704764