The Need for Competency-Based Education


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The Need for Competency-Based Education

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ABSTRACT
While pharmacy education updates learning as new information arises, changes to learning experiences can trail behind current practices and technology. There have been multiple calls for radical changes in how health professions education is delivered in order to ensure patients are receiving high-quality care. Competency-based education (CBE) has been one way discussed in the literature for how to handle this need to develop students who have a willingness to learn and can problem solve. The goal of this review is to examine whether CBE is needed to drive the profession of pharmacy forward. To address, we collaboratively identified stakeholder perspectives to evaluate the need. The following stakeholders achieved consensus among the committee members: patients/society, learners, workplace/profession, and academic institutions. Based on those perspectives, needs and gaps to address those needs were identified and are presented in this review.
1. INTRODUCTION

Educators have delivered content to students for decades to enable student attainment of a preset standard. An education standard may be as simple as a list of successfully passed courses that reflect a variety of thoughts and opinions of educators, administrators, politicians, and professionals and/or may include workplace- or business-related skills and societal needs. Although Pharmacy Education has established educational standards that programs must meet, how a program meets these standards can be as unique as the individuals delivering the program. Content in pharmacy education is delivered through multiple mechanisms including lecture, case-based, problem-based, and team-based learning, flipped classrooms, skills laboratories, and experiential education. Students are assessed by the content they can recall and apply to simulations and eventually to real-life situations. To move forward in the curriculum, students are required to attain a minimum score or achievement to meet an educational standard. Pharmacy education often revises content by reshuffling the order of content delivery or adopting a different delivery method, but student success remains the attainment of a minimum score or standard in a specified time-frame.

The content also is revised to stay current with changes in pharmacy and medicine; however, changes to learning experiences can trail behind current practices and technology. There have been multiple calls for radical changes in how health professions education is delivered in order to ensure patients are receiving high-quality care. As a result, pharmacy education has engaged or is currently engaged in curricular transformation efforts to better prepare graduates for the ‘jobs to be done’ in modern healthcare. However, the ‘jobs to be done’ are constantly evolving within the rapidly changing complex healthcare system. With education that is fragmented, time-bound, and disconnected from optimal pedagogies and health care challenges, change can no longer be incremental - it must be evolutionary. The global pandemic in recent years has brought to light many inflection points that were pointing to a need to be bold in our thinking about pharmacy education. As a recent commentary pointed out, these inflection points existed prior to the pandemic; however, the pandemic introduced a short-term disruption that led to adaptive changes. As we emerge from the “short-term” fixes that were
implemented, it is critical that we continue to challenge our current assumptions and move towards sustainable educational change that fits the needs of our society. In order for pharmacy education to accomplish this, we must focus on strategic forecasting and establish mechanisms for assessing needs on a regular basis and have an educational model adaptive enough to fit those needs.

For education to keep pace with the marketplace, students need to learn “how to think” more than “what to think”. A student’s ability to adapt to a changing marketplace and embrace change can be rooted in their willingness to learn and problem-solve. Adaptive learning experiences guide students to practice skills and build on their successes to demonstrate competency. Competency is defined as the attainment of excellence - not the meeting of a minimum standard. Competency-based education (CBE) has been one way discussed in the literature for how to handle this need to develop students who have a willingness to learn and can problem solve. The AACP Competency-Based Education Taskforce developed the following definition to aid pharmacy in discussing CBE:

“Competency-based pharmacy education (CBPE) is an outcomes-based curricular model of an organized framework of competencies (knowledge, skills, attitudes) for pharmacists to meet healthcare and societal needs. This learner-centered curricular model aligns authentic teaching and learning strategies and assessment (emphasizing workplace assessment and quality feedback), while de-emphasizing time.”

The goal of this review is to examine whether CBPE as defined is needed to drive the profession of pharmacy forward.

2. METHODS

As part of the American Association of Colleges of Pharmacy (AACP) CBE Task Force meetings, it was established that a key question to answer is whether or not there is a need for CBPE - is it the right thing for the academy to do? The Task Force met regularly over the course of a year with offline assignments to address this question.

In the first phase of evaluation, the Task Force members worked collaboratively to identify stakeholder perspectives to evaluate the need. The stakeholders were identified by evaluating the
definition of CBPE drafted by a workgroup of the committee and agreed upon by the committee, as noted above. The literature also was searched to evaluate the possible stakeholders. Then, the Task Force members met and reached a consensus on the literature review and the definition to finalize the list of stakeholders. The following stakeholders achieved consensus among the committee members: patients/society, learners, workplace/profession, and academic institutions.

3. IS CBPE THE RIGHT THING TO DO?

3.1. Patient/Society Perspective

In recent decades, the profession of pharmacy has evaluated the role in which pharmacists could best contribute to society, particularly in light of the current state of the healthcare system and societal needs. For example, in 1993, the Commission to Implement Change in Pharmaceutical Education recommended a change to the PharmD as the sole entry-level degree for the pharmacy profession due to its ability to position pharmacists to provide pharmaceutical care through the safe and effective use of medications. Today, medication use remains prevalent, with, on average, 66% of Americans taking at least one prescription medicine monthly, 24% taking three or more per month, and 13% taking five or more prescription medications per month. Costs associated with this use also remain high, with prescription drug spending exceeding $300 billion and similar costs estimated for resolving improper and unnecessary use of medications. Cost and utilization are predicted to increase due to the rising numbers of older adults and high rates of medication use in that population.

While medications remain a key aspect of patient care, the U.S. healthcare system and medication therapies are becoming increasingly complex, and our patients are older with multiple co-existing chronic diseases. Thus, the contemporary pharmacist must develop adaptive expertise despite curricula that can be fragmented, outdated quickly, and static. Pharmacists educated in current curricula can then be ill-equipped to fit the dynamic needs of patients and populations. Academic pharmacy still is asking the question of what we can do to position pharmacists as the solution to the continuing problem of suboptimal medication use, as medication-related morbidity and mortality is a continuing concern for society.
The Task Force completed a comprehensive assessment of the literature and identified that the current needs from society/patient perspective revolve around medication expertise, as noted in Table 1. Medication experts are critical due to the complexity of the health system (fragmented care and access to care) and medication regimens (increased complexity of medications), the increased use of prescription and non-prescription medications, and changing patient demographics (increased life expectancy). With a need for medication safety due to high rates of drug-related morbidity and mortality, the “Triple Aim” has evolved to the “Quintuple Aim” that now includes both improved outcomes and reduced costs as part of its goals. These aims will likely continue to evolve as health care and society evolves.

Pharmacists should be well-positioned as medication experts to fit this important societal need. Many studies have demonstrated improved medication outcomes and/or cost savings when pharmacists are involved in patient care. To do so, we must position pharmacists as a solution to suboptimal medication use in our health system. Given the rapidly-changing world, these pharmacists must be adaptive medication experts, able to fill expanding roles, address the ever-evolving healthcare needs of society, and provide person-centered care. Recommendations for training pharmacists have focused on taking a patient-centered approach to medication optimization. However, given that we are still seeing the problem of medication-related morbidity and mortality, even though studies have shown the value of pharmacists, it might suggest the need to take a fresh look at our educational model, ensure it is designed across a lifetime to fit our societal contract, and engage in the transformation that is needed to fill this gap.

CBPE could be one approach to address the need for medication expertise by patients and society. The Macy Foundation Conference Proceedings stated that societal needs for high-quality care will be better met when competencies are assessed and verified and then continuously assessed throughout the career lifespan. Pharmacy already has started on this journey by defining outcomes. Since the early 1990s, the AACP Center for the Advancement of Pharmacy Education (CAPE) has defined expected outcomes for developing patient-centered, practice-ready pharmacists (CAPE Educational Outcomes); programs can currently adapt these educational outcomes and assess student progression as deemed
appropriate.\textsuperscript{24} Despite already having these outcomes, the Task Force also identified gaps that need to be addressed as a decision is made to potentially move to CBPE as an option to better ensure pharmacy education is meeting societal/patient needs (Table 1).

3.2. Learner Perspective

There has been an evolution of our learners and the roles of students; they have changed from that of a client to a consumer and partner in the learning process.\textsuperscript{15} Much of the change we see in our learners is a result of changes in our world that have conditioned us to process information faster (not deeply) across multiple devices, learn in bite-sized chunks due to shorter attention spans, desire more visualization in learning, and seek instant gratification with frequent rewards. It is important to note that these changes in the modern learner are age-independent and can be seen across all age groups. In order to optimally reach these learners, we have to consider an educational model that centers around helping the learner to understand why the learning program is useful to their future jobs, while also being highly visual, brief, available anytime, anywhere, and include them as active participants.\textsuperscript{16}

Another important consideration is the increasing number of non-traditional learners who enter pharmacy programs with a broad variety of previous experiences. However, a potential deterrent to attending college and, subsequently pharmacy education, is the increasing student debt load that leads to less discretionary income despite pharmacist salaries.\textsuperscript{17} For example, in nursing, the main barriers to pursuing a Bachelor of Science in Nursing are financial constraints (ex: academic program costs, lost work hours due to class time), family, competing priorities sacrifices (ex: work vs school vs family vs volunteering), negative academic experiences in past, and a lack of academic support (ex: inadequate access to tutoring, writing support, and test-taking strategies).\textsuperscript{18} These challenges are not too different for professional program student pharmacists. The COVID-19 pandemic highlighted many of these barriers along with a renewed focus on achieving work-life balance. Thus, it is critical that we understand the barriers to pursuing the PharmD and consider the needs of learners to adapt our educational model. Since the world and healthcare are changing so rapidly, most prospective students understand the need to
acquire and obtain new degrees and/or credentialing during their career; thus, it is essential to consider these learner needs along with the necessity to individualize learning.

The modern learner will need to exercise agency in their own education and throughout life in order to continue to adapt to the ever-changing world. Agency requires the ability to frame a guiding purpose and identify actions to achieve a goal. Two factors help learners enable agency. The first is a personalized learning environment that supports and motivates each student to nurture his or her passions and make connections between different learning experiences and opportunities. The second is building a solid foundation in the field. Thus, the school of the future may involve an adaptive curriculum with the pace, duration, and strategies for each learner’s experiences to be continuously adapted to their individual unique and evolving characteristics and readiness for learning across a lifetime of education needs.

Given these considerations, the Task Force completed a comprehensive assessment of the literature and identified that the current needs from the learner perspective revolve the need for individualized education to fit the modern, lifelong learner, as noted in Table 2. The Task Force also identified gaps that need to be addressed as a move to CBPE is considered as a way to better fit learner needs (Table 2).

3.3. Workplace/Profession Perspective

The profession of pharmacy has wrestled for decades on how best to guide pharmacy education to align with the ever-changing healthcare system, society, and the profession itself. Related to the core-value of ensuring safe and effective drug use (i.e., providing pharmaceutical care), the mission of education was defined in 1989 as: to prepare students to enter into the practice of pharmacy (entry-level) with the abilities and values to serve society as caring, ethical, learning professionals, capable of adapting in a changing health care system; responsible for generating and disseminating new knowledge about drugs, drug therapy, and drug use and about pharmaceutical care systems; and able to provide structured postgraduate education and training in which practitioners maintain their competence and acquire new competencies to serve the changing needs of society. The workgroup defined “entry-level” as a beginner who is competent in defined knowledge, skills, attitudes and values, and from this work,
pharmacy education adopted the concept of pharmaceutical care, focused on curricular change related to competencies and outcomes reflective of pharmaceutical care, and examined and strengthened the educational process effectiveness. Subsequent workgroups focused on ability-based educational outcomes; creating an educational plan to provide assurance of students’ performance of the outcomes; illustrating the relationship between knowledge and professional abilities across curricular levels and the progressive development toward entry-level competence; and the importance of student involvement in education, assessment of student growth, and mentoring feedback.

With the continued rapid and extensive changes in healthcare over the past several years, along with these changes coming at a fast and unpredictable pace, scientific knowledge and new medication knowledge are continually expanding. Some have argued that living in a VUCA (volatile, uncertain, complex, and ambiguous) healthcare world necessitates different thinking, strategies, and approaches to prepare the next generation of pharmacists. In order to thrive in a VUCA world, it is critical to understand the transferable skills that are necessary in each component of the VUCA acronym and map them to the most desired skills employers are currently seeking. This will allow the profession of pharmacy to more readily identify future needs for pharmacists - and pharmacy education. Amid the need to adapt and identify future needs, it also is imperative that we are grounded in a common professional identity that is unique from other healthcare professions, much like the challenge from Paul Parker in 1967 to have our focus be: “Drugs and the People”. As part of these challenges, he believed that we should be responsible for every aspect of drugs, be patient- and drug-oriented, function as integral members of the healthcare team, and specialize functionally. However, is pharmacy truly achieving this? In the 1990s and today, many believe that pharmacy is still denying its true, unique, and important contribution to patient care and the healthcare system at large. The “fate of pharmacy practice in all settings in interlinked” through our unique professional identity: medication specialists whose primary role is to prevent, identify, and manage medication therapy problems and their root causes.

In order to meet the needs of our workplace and profession, education must change. Thus, the Task Force conducted a comprehensive assessment of the literature and identified the current needs from
the workplace/profession perspective, which focuses on adapting amidst a rapidly changing environment by enhancing skills, being resilient, and enhancing care collaboratively, as noted in Table 3. The Task Force also identified gaps that would need to be addressed as we decide whether CBPE is best positioned to fit the workplace/profession needs of the future (Table 3).

3.4. Academic Institution Perspective

The COVID-19 pandemic highlighted many pre-existing challenges within academic pharmacy, including an information explosion, discontinuity in education, rising student debt burden and admissions challenges, faculty burnout, assessment challenges, and professional preparedness for transitions. Similar challenges were highlighted in the 2017 Josiah Macy, Jr Foundation conference report. First, there has been a substantial expansion of content relevant to the practice of pharmacy and other health professions. This has led to concerns about curricula that are too dense at every stage of formal education, in part due to curricular hoarding when the utility of content is not regularly reviewed or when there is an emotional attachment of faculty to certain content. Recent commentaries also have discussed the overload academic pharmacy faces with multiple competencies, checklists, and frameworks that do not appear to be connected and integrated. This lack of an integrated approach may be due to a lack of a standard definition of practice readiness and entry-level pharmacy, which is critical in order for pharmacy to fulfill its societal contract for improving medication outcomes. The pharmacy academy has difficulty matching what is ‘needed to know’ instead often focuses on ‘what is nice to know’ or ‘just in case learning,’ based upon all the many roles graduates could possibly pursue. Another concern with information explosion is the reduction of foundational science (basic, pharmaceutical, and social and administrative sciences) content rather than capitalizing on the integration of foundational and clinical sciences especially late in the curriculum.

Secondly, there is a discontinuity in education. Optimal workplace learning requires stable, longitudinal assignments that enable students, residents, faculty, and patients to build relationships over time, but challenges such as monthly block rotations, shortened lengths of stay, and a shift from inpatient to outpatient care without a concomitant shift in educational venues have led to fragmentation and lack of
continuity for both caring and learning. Additionally, competency statements for the continuum of pharmacy education have been formulated by different organizations as they relate to PharmD students, postgraduate training, and clinical pharmacists. There is a need to align all competencies using a common language with intentional sequencing and connecting to licensure and re-licensure requirements as well as lifelong learning.

Thirdly, challenges with the current model of education are mounting due to student debt burden, fewer applicants, and faculty burnout. The debt burdens of our students and trainees continue to escalate, causing significant stress, impacting career choices, and declining pharmacy education admissions. Higher education is facing a time where there are calls to justify a return on the investment of education. The challenges with admissions have led to significant financial burdens on academic institutions. Even state-funded programs have seen decreasing state support, and these financial challenges have led to mission creep in health professions schools/colleges. Many programs have had expansion in research and clinical enterprise which has led to growth in faculty; however, a small number of these faculty are involved in the educational mission. There has been a call to put school back in medical school and acknowledge the fundamental importance of the education mission even in challenging times.

Pharmacy education is no different. Faculty members also are under intense pressure to maximize overall productivity and focus on revenue generation activities and, thus, may have less time to spend teaching and assessing learners. Inherent in this time-pressured environment is less time spent on observation, assessment, and coaching of learners, which may result in failing to identify those in need of more instruction and guidance to achieve satisfactory performance. The pandemic created further challenges with the “Great Disengagement” of faculty, where work is getting done, but there is no spark or passion in the work. The connections and trust with the institutions were lost during the pandemic, and now there needs to be a focus on culture rebuilding.

Challenges also have been faced in the area of assessment. High-stakes decisions about advancement, retention, and graduation are made with persistent emphasis on multiple-choice exams, while robust assessments of critical competencies are not as widely used for these key decisions. Rather,
these decisions should not be taken on the results of single examinations at one point in time but using a program-focused or programmatic approach based on aggregation and analysis of evidence from different sources collected over time. This will require defining the outcomes of an authentic curriculum to align learning assessments with learning experiences. Additionally, there is a need to move away from compartmentalized assessment of learning to program-focused assessment for learning. The COVID-19 pandemic highlighted the need to define measurable competencies needed for graduate success; however, pharmacy educators have not enunciated clear or consistent metrics for student success. Pharmacy education has grappled with metrics for a long time, with practitioners realizing that traditional metrics of student performance may be misleading when focused on short-term, easily quantifiable results such as standardized tests and grade point averages. Yet, accreditation standards permit a continued focus on traditional metrics. There has been some advancement in approaches to competence assessment by introducing entrustable professional activities, which moves us closer to a consistent approach to measure competency across the profession. Ultimately, criteria for health professional certification and licensing need to be aligned with educational goals.\textsuperscript{2,15,36,39,50,51}

Finally, healthcare programs accepting new graduates and employers hiring newly licensed clinicians have raised concerns about inadequate training and deficiencies in critical competencies. Many times, health systems are left to train and develop competencies that are not developed while in the degree program. Thus, it is critical to understand what competencies are necessary for making these transitions and then what can be developed after going into a new training program and/or job. Figure 1 illustrates the transitions that occur across the lifelong educational lifespan of a pharmacist.\textsuperscript{36,39,40,52-54}

To move forward, the academy must change and recognize the importance of educators and enhance collaboration. Educators are key to the success of an education program. Priority must be given to defining the roles of the educator and valuing each of these roles with appropriate appointment, recognition, training, and reward. Since education includes experiential learning, this must include robust preceptor training. Many medical schools have established a department of medical education in order to support the educational mission and the societal contract through increased sophistication of the
Similarly, collaboration instead of competition will be critical for the future of pharmacy education. Collaboration should occur between educators in different phases of the curriculum, including experiential training and postgraduate training. Collaboration also will need to extend beyond the institution to other institutions nationally and internationally and across education domains and transition points. There will also be a need for close contribution with all the key stakeholders including other professions, educationalists, technologists, and patients. For sustainability of the education program needed in pharmacy education, we may need to consider that delivery of the education program will be shared with other schools nationally and internationally, including curricula, teachers, educational expertise, learning resources, and learning opportunities. Benefits will be achieved from unbundling or outsourcing elements of the education program. It will allow a school to focus on its core activities where it is best and at the same time access additional experts and facilities. Another key collaboration will need to be with educational technology companies such that the full benefit of technology can be realized in our educational models. A process will be needed for keeping up with the latest technology trends, such as student success/learning analytics, and then partnering with technology partners for pharmacy education customization.

The Task Force conducted a comprehensive assessment of the literature and identified the current needs from an academic institution perspective, as noted in Table 4. These needs focused on the challenges with student recruitment, faculty roles and responsibilities, and adapting the curriculum to prepare students for professional practice. The Task Force also identified gaps that need to be addressed as we consider whether CBPE is better positioned to fit the academic institution needs (Table 4).

4. CONCLUSIONS

Upon review of the data from each of the different stakeholder perspectives, CBPE is potentially one direction to consider to improve pharmacy education, given that there are clear needs related to CBPE for each of the stakeholders. However, there are still gaps that need to be addressed before moving full force into CBPE. Additional task forces, similar to this current one, may be one way to continue this discussion. Research efforts also should continue to evaluate CBPE.
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Table 1. The Need for Competency-Based Pharmacy Education (CBPE) from Stakeholder Perspectives Along with Potential Gaps: Society/Patient Perspective

<table>
<thead>
<tr>
<th>Needs</th>
<th>Gap</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication expertise that is adaptive; inclusive of person-centered</td>
<td>Consistency and clarity regarding pharmacy practice. Limited</td>
<td>The last comprehensive scope of pharmacy practice study was conducted in 1994. An update is needed to define what the full, contemporary scope of pharmacy practice is to address healthcare and societal needs with the understanding that there may be different levels of pharmacists within this full scope (not all pharmacists have to do all things) as part of a lifetime education model.</td>
</tr>
<tr>
<td>care; and improves medication safety, outcomes, and costs. 1,5,6,11-23,60</td>
<td>flexibility for innovation within the profession.</td>
<td></td>
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</tbody>
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References:


Lack of a clear understanding of the pharmacists’ professional identity. The pharmacist professional identity is poorly defined, yet there is robust literature on pharmacist professional identity formation, especially in students. The message of pharmacists’ professional identity must be communicated clearly to society and other stakeholders.

A common language around the scope of pharmacy practice and the medication use process is needed.

Heterogeneity of data related to the outcomes and value of pharmacists within healthcare.

Many systematic reviews have tried to provide robust data related to outcomes and economic value in pharmacists for medication optimization; however, the lack of common definitions as well as the heterogeneity of the studies and the outcomes have limited the ability to develop conclusive data.14

It is imperative moving forward to use a common language with similar documented outcomes that can be consolidated nationally to document the benefit that has been reported in siloed reports.
Table 2. The Need for Competency-Based Pharmacy Education (CBPE) from Stakeholder Perspectives Along with Potential Gaps: Learner Perspective

<table>
<thead>
<tr>
<th>Needs</th>
<th>Gap</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-effective education model with a view towards student debt relief</td>
<td>Personalized pharmacist-education needs to be defined.</td>
<td>There is resilience and burnout, as learners today place higher value on quality of life.</td>
</tr>
<tr>
<td>Altered model to reflect the modern learner</td>
<td>Evidence-based education programs aligned to the needs of the modern learner and modern pharmacy practice need to be created.</td>
<td>Modern learners are untethered, collaborative, have shorter attention spans, and are empowered to learn independently.</td>
</tr>
<tr>
<td></td>
<td>There is a lack of data on student workload and test anxiety that would occur with CBE.</td>
<td>There must be development of self-awareness to “know what they don’t know” (metacognition).</td>
</tr>
<tr>
<td>Lifelong, learner-centered model:</td>
<td>There also is an overall disconnect across the educational continuum [K12 through continuous professional development (CPD)].</td>
<td>A move from the student as a client to the student as a partner.</td>
</tr>
<tr>
<td>There is a need for a success-for-all model, as learning is not linear</td>
<td>Postgraduate professional development is disconnected from the professional degree.</td>
<td>There is an increasing number of non-traditional students (e.g., older students who return for a new career) with various past experiences who are interested in pharmacy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interest in stackable credentialing as the need for lifetime education is becoming essential due to the rapid change of pace in the workplace.</td>
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</table>


Table 2. The Need for Competency-Based Pharmacy Education (CBPE) from Stakeholder Perspectives Along with Potential Gaps: Workplace/Profession Perspective

<table>
<thead>
<tr>
<th>Needs</th>
<th>Gap</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapt to a rapidly changing, complex healthcare environment. 72-75</td>
<td>There is a need for a unified definition of entry-level, practice-ready pharmacists.</td>
<td>Changing workplace demands and need for the pharmacy profession to be proactive and not reactive. 2,22,75-77</td>
</tr>
<tr>
<td>Address resilience and burnout. 51,82</td>
<td>The model of training needed for pharmacists' development across a lifetime needs to be identified and then aligned with professional education.</td>
<td>Staying abreast of healthcare trends (technology, insurance, workforce, drug supply chains, regulatory) 74,78</td>
</tr>
<tr>
<td></td>
<td>There is an increased demand for post-graduate education in the midst of a limited lifelong learning model.</td>
<td>Increased need for transferable skills within the workplace (e.g., critical thinking/clinical reasoning, emotional intelligence, information retrieval skills). 27,79,90</td>
</tr>
<tr>
<td></td>
<td>There also is a lack of information on how to balance education and provision of services in academic medical centers</td>
<td>Different expectations exist among employers, current pharmacists, and graduating pharmacists.</td>
</tr>
<tr>
<td></td>
<td>Pharmacists lack access to information to meet needs.</td>
<td>Professional identity is poorly defined across the profession.</td>
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<tr>
<td>Enhance interprofessional collaboration with a focus on quality improvement. 1,55</td>
<td></td>
<td>Pharmacists face technology, data transfer across systems, and/or connectivity limitations within the healthcare system creating barriers to access patient-specific information.</td>
</tr>
</tbody>
</table>
Table 4. The Need for Competency-Based Pharmacy Education (CBPE) from Stakeholder Perspectives Along with Potential Gaps: Academic Institution

<table>
<thead>
<tr>
<th>Needs</th>
<th>Gap</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attracting and adequately supporting learners through an education</td>
<td>Develop and recognize competency in teaching.</td>
<td>The academy is facing significant challenges with admissions.</td>
</tr>
<tr>
<td>while accountable to stakeholders.</td>
<td>Lack of definition of the various roles of educators in pharmacy education along with core competencies needed for these roles and intentional faculty development around these educator competencies</td>
<td>The academy must stay abreast of disruptions in higher education, and there is an increased need to show return on investment (accountability to society and students/graduates).</td>
</tr>
<tr>
<td>Faculty face mounting challenges delivering the curriculum.</td>
<td>Define and value excellence in teaching in institutional rankings and educator recognition.</td>
<td>It will be essential to move from undervaluing teaching to recognizing the importance of teaching and the educators.</td>
</tr>
<tr>
<td>Integrating an evidence-based, adaptive curriculum that prepares students to meet society and patient needs.</td>
<td>Create a continuum of learning to foster student success and preparedness.</td>
<td>There is an increased demand on faculty due to budget reductions.</td>
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<td></td>
<td>Limited continuity of education across the learning lifespan.</td>
<td>Faculty (along with staff and students) are facing resilience challenges and burnout.</td>
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<td>Align assessments to practice-ready pharmacists and consider that first-time pass rates of NAPLEX may not be the best metric.</td>
<td>Faculty roles are changing (fit for purpose).</td>
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<td></td>
<td>Develop programmatic assessment blueprints.</td>
<td>The academy needs to use learning theory and evidence-based learning practices that are aligned to a comprehensive assessment strategy both of and for learning.</td>
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<td></td>
<td>Define the appropriate support needed in the educational ecosystem.</td>
<td>There should be an authentic curriculum with its priority of graduating pharmacists who have the necessary knowledge, skills, and attitudes to meet the needs of the population they serve.</td>
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<td></td>
<td>Exploit learning technology to its fullest extent to allow for creativity and effective use.</td>
<td>There should be an integrated curriculum with the learning journey mapped and transparency that preserves the sciences.</td>
</tr>
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<td></td>
<td>Move from just-in-case to just-in-time learning that fits an integrated learning journey (adaptive learning or personalized learning)</td>
<td>There has been mission creep into areas beyond education and curricular hoarding as schools/colleges expanded to meet accreditation standards. This has increased the need for better-defined outcomes and competencies that are integrated across the curriculum and ensures basic sciences are not removed.</td>
</tr>
<tr>
<td></td>
<td>Create collaborations to foster learning and efficient data collection and analysis for assessment and student success.</td>
<td>There is a lack of strategic collaboration across institutions (and within institutions) and with outside partners including educational technology companies.</td>
</tr>
<tr>
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<td></td>
<td>There is a lack of data in pharmacy education on use of learning analytics in order to identify individual student learning needs.</td>
</tr>
</tbody>
</table>
Figure 1. Continuum of Competence in Lifelong Education

CRediT authorship contribution statement

Denise Rhoney: Conceptualization, methodology, writing – original draft, writing – reviewing and editing, project administration

Aleda Chen: methodology, writing – original draft, writing – reviewing and editing

Mariann Churchill: methodology, writing – original draft, writing – reviewing and editing

Kimberly Daugherty: methodology, writing – original draft, writing – reviewing and editing

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Susan Meyer: Conceptualization, methodology, writing – original draft, writing – reviewing and editing, project administration

Declaration of interests

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: