Pedagogical Tools and Strategies for Developing Cultural Intelligence in Pharmacy Students and Educators

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\textbf{ABSTRACT}

\textbf{Objective:} To review evidence-based pedagogical tools and strategies used to support the development of cultural intelligence in pharmacy education.

\textbf{Findings:} An exhaustive list of search terms was included to capture the variety of terms for “cultural intelligence” (eg, cultural competence). The search was not limited to any publication year range. Search engines included PubMed, Embase, CINAHL, Scopus, ProQuest Dissertations and Theses, ERIC, and PsycInfo. A total of 639 articles were identified after removing duplicates. Eighty-two articles were included for full review after screening. Year of publication ranged from 2004 – 2021. Two articles (2.4%) described tools for educator development, whereas the rest (n = 80, 97.6%) focused on student development. Examples of tools reported included lectures and workshops. Twenty-seven articles (32.9%) described pedagogical tools for fostering cultural intelligence concurrently with interprofessional development; the remaining articles (n = 55, 67.0%) focused only on pharmacy. Thirty-two articles (39.0%) used quantitative analysis methods, and 13 articles (15.9%) used qualitative analysis methods. Sixty-four articles (78.0%) included outcomes of perceptions, 6 (7.3%) included outcomes of participation, and 33 (40.2%) included outcomes of performance. Although not every study addressed all 4 cultural intelligence framework domains (awareness, knowledge, practice, and desire), each domain was apparent within the included articles.

\textbf{Summary:} Various pedagogical tools have been used to develop cultural intelligence in pharmacy students with some tools used more than others. Findings suggest that integrating various pedagogical methods throughout the curriculum aligns more closely with the dynamic nature of learning and continuous self-refinement required to develop cultural intelligence.

1. Introduction

Cultural intelligence, defined as the ability to interact with empathy and understanding based on the values, beliefs, attitudes, and body language of people from different cultures, is critical to effective patient care.\textsuperscript{1} Although the nature of culture is complex, it can be defined as “a dynamic system of rules, explicit and implicit, established by groups to ensure their survival, involving attitudes, values, beliefs, norms, and behaviors, shared by a group but harbored differently by each specific unit within the group, communicated across generations, relatively stable but with the potential to change across time.”\textsuperscript{2} A lack of cultural understanding contributes to health disparities, ultimately leading to poor patient outcomes.\textsuperscript{3} Culturally intelligent healthcare professionals are particularly crucial in the United States (U.S.), where the foreign-born share of the U.S. population is projected to be its highest ever by 2028.\textsuperscript{4,5} This number is expected to continue growing beyond 2028, highlighting the increasing racial and cultural diversity of the nation. As such, healthcare professionals must be prepared to provide high-level quality care to patients of any and all backgrounds. Appropriate and intentional cultural intelligence training is, therefore, essential for all future healthcare providers.

Pharmacists are no exception to this directive for cultural intelligence training as one of the most trusted and accessible healthcare professionals.\textsuperscript{6} Because they interact directly with patients, pharmacists

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have a unique opportunity to help reduce health disparities and resolve drug-related problems. Numerous seminal pharmacy education standards include recommendations for health disparities and cultural competence training. For example, the American College of Clinical Pharmacy acknowledges that “a critical need exists for pharmacy education to incorporate patient-centered culturally sensitive health care knowledge and skills into the curriculum.” Similarly, the Accreditation Council for Pharmacy Education lists cultural sensitivity, measured by “(ability) to recognize social determinants of health to diminish disparities and inequities in access to quality care,” as a key element of pharmacists’ approach to practice and care.

As noted in a recent review by Drame and colleagues, there is a lack of guidance for schools and educators aiming to achieve these outcomes despite calls for cultural training in pharmacy education. Current models are fragmented and inconsistent across pharmacy programs. Some integrate cultural competency training in the context of health disparities, inadvertently encouraging students to associate specific cultural diversities with negative experiences or outcomes.

A growing body of literature suggests that it is not feasible to provide students with knowledge or content about every culture because of the complex, dynamic, and multi-faceted nature of culture. In fact, this risks oversimplifying people of different cultures and putting them into defined categories. As an alternative, researchers use the cultural intelligence domains (i.e., awareness, knowledge, practice, and desire) to characterize ways in which we can promote this ability in students, not just with knowledge but also with awareness, practice, and desire.

Although recent reviews highlight cultural knowledge and learning environments in pharmacy (e.g., didactic, experiential, or interprofessional), gaps persist regarding the types of specific pedagogical activities utilized (e.g., reflections, journaling, or simulation), aspects of culture addressed (e.g., race, religion, or homelessness), and cultural intelligence domains targeted (i.e., awareness, knowledge, practice, or desire). Further, strategies used to help pharmacy educators develop the skills needed to promote cultural intelligence in students remain unknown.

Therefore, it is imperative to further review and compile a comprehensive toolkit of evidence-based pedagogical tools and strategies that can help educators teach students how to dynamically reshape and continually refine their own thinking as culturally intelligent practitioners. The purpose of our review was to address this gap by conducting a scoping review of cultural intelligence in pharmacy education literature and identify tools and strategies that have been utilized to train students and educators. Our review extends the work of others by highlighting the interest of global scholars and educators in cultural intelligence.

2. Methods

This review followed the 2018 Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (Figure). We used a combination of standardized terms and keywords in PubMed, Embase, CINAHL, Scopus, ProQuest Dissertations and Theses, ERIC, and PsycINFO. Although the term “cultural intelligence” is used in this paper to acknowledge the dynamic nature of learning and continuous self-refinement, an exhaustive list of search terms was employed to capture the variety of terms used for “cultural intelligence” (e.g., cultural competence, cultural knowledge, cultural awareness, cultural practice, or cultural desire). Our initial search was conducted in July 2021. Results were exported to Sciview (SAGE Publications Limited), a reference manager, and duplicates were removed. The remaining unique citations were imported into Covidence (Veritas Health Innovation Limited), a systematic review management software.

Screenings and reviews were conducted by 2 investigators. In phase I screening (title and abstract), articles were advanced if the abstract contained terminology related to cultural intelligence, included pharmacy education, described pedagogical strategies in any learning environment (e.g., classroom or experiential), were written in English, and were published in peer-reviewed journals. In phase II screening (full-text review), any manuscript that described educational strategies, tools, methods, curricula, and/or instructions utilized to develop cultural intelligence in pharmacy students or educators was advanced for data extraction. Literature reviews were excluded as they did not provide the level of detail we required on individual pedagogical tools. Any disagreements between the 2 investigators were resolved through a consensus building process. Reference screening was also conducted during this phase.

The following research questions guided our data organization and analysis: (1) What pedagogical tools have been used to develop cultural intelligence in pharmacy students and educators? (2) What research methods and outcomes were used to evaluate these pedagogical tools? and (3) Which cultural intelligence domains were addressed by these pedagogical tools?

Data extraction was conducted by 1 investigator and included characteristics of the article (e.g., publication year or publication origin), study design (e.g., participants or disciplines), type of culture (e.g., race or religion), learning structure (e.g., classroom or advanced pharmacy practice experience), pedagogical activity (e.g., reflection or journaling), research methods (e.g., qualitative or quantitative), research outcomes (e.g., perceptions, participation, or performance), and cultural intelligence domain. Type(s) of culture was aggregated into 2 categories: types “traditionally” associated with culture (e.g., race or ethnicity) and types associated with an “expanded” and more inclusive view of culture (e.g., homelessness, deafness).

Research outcome(s) was coded according to whether the study assessed and reported perceptions, which is defined as what the study subjects themselves thought or felt without an objective indication that they actually gained an understanding of the material, participation, which is defined as passively engaging in an intervention (e.g., clicker questions in class or completing a checklist), and/or performance, which is defined as a measurement of learning (e.g., exams or objective structured clinical examinations [OSCEs]).

The cultural intelligence domain(s) was coded in accordance with Minshew and colleagues’ previous work: cultural knowledge, defined as the process of seeking and obtaining a knowledge base about culturally diverse groups; cultural awareness, defined as the process of self-examination and in-depth exploration of one’s own cultural background; cultural practice, defined as the process of interacting with patients from culturally diverse backgrounds and possessing the ability to gather relevant cultural data regarding the patient’s presenting problem as well as accurately perform a culturally-based assessment; and cultural desire, defined as the motivation of a health care practitioner to want to engage in the process of becoming culturally intelligent.

3. Findings

As seen in Fig. 1, our initial search identified a total of 867 articles. After removing duplicates, 638 unique abstracts were screened in phase I and 197 were screened in phase II. We were not able to retrieve the full text for 3 articles. One hand-picked article from reference scanning was included for a total of 82 articles that met all inclusion criteria for our review.

Table 1 shows the characteristics of the included articles. A majority of the articles (n = 34, 41.5%) were published between 2015 and 2019. Publication origin was based on which university the first author was affiliated. Most articles (n = 75, 91.5%) originated in the United States, 3 (3.7%) originated in Australia, and 1 (1.2%) article each originated in Thailand, Taiwan, Canada, and Qatar. A majority of articles (n = 66, 80.5%) did not report demographic data. Although all articles included
a focus on student development, 2 (2.4%) also included a focus on educator development and 1 (1.2%) included a focus on healthcare professional development (continuing education course for practitioners and students). Fifty-five (67.1%) of the articles exclusively included pharmacy students whereas, 27 (32.9%) included students from other healthcare professions (eg, medicine, nursing, or dentistry). Seventy-five (91.5%) articles included traditional types of culture whereas, 57 (69.5%) included expanded types of culture.

Table 2 shows the types of pedagogical characteristics and tools identified in our review. Most articles (n = 66, 80.5%) occurred in classroom environments, including in-person and online learning. About half of the articles (n = 40, 48.8%) occurred in experiential learning environments such as advanced pharmacy practice experiences or study abroad experiences. The most common structures used were required courses (n = 22, 26.8%), elective courses (n = 19, 23.2%), and study abroad (n = 14, 17.1%). The most common activities employed within the structures were lectures (n = 44, 52.7%), reflections (n = 42, 51.2%), and discussions (n = 39, 47.6%).

The cultural knowledge domain had the highest occurrence rate across learning environments, whereas the cultural desire domain had the lowest occurrence rate. The same was true for all structures as well. For specific structures, all included the 4 domains with varying occurrence rates. Elective courses (n = 19, 100%) and domestic clinical immersion experiences (n = 4, 100%) had the highest occurrence rates for the cultural knowledge domain across all structures. Domestic clinical immersion experiences (n = 4, 100%) also had the highest occurrence rate for the cultural awareness domain, whereas study abroad had the highest occurrence rate for the cultural practice domain (n = 14, 100%) and cultural desire (n = 13, 92.9%) domain across all structures.

The articles employed different research methods, which are shown in Table 3. About one-third of articles (n = 32, 39.0%) collected and analyzed their data using quantitative methods (eg, pre and post-intervention survey tools using Likert scale questions). Twenty-six (31.7%) articles used qualitative methods (eg, focus groups or written reflections). About one-third of articles (n = 26, 31.7%) used multiple methods with both quantitative and qualitative data collection and analysis. Eleven (13.4%) articles did not report data analysis methods or results. A majority of articles (n = 64, 78.0%) included outcomes of perceptions, whereas 6 (7.3%) articles included outcomes on participation, and 33 (40.2%) articles included outcomes on performance. Examples of strategies used to measure performance outcomes included written deliverables (eg, quizzes or exams) and OSCEs.

Although not every article addressed each cultural intelligence domain, all 4 domains were found within the review. Sixty-seven (81.7%) articles addressed cultural knowledge, 62 (75.6%) addressed cultural awareness, 54 (65.9%) addressed cultural practice, and 48 (58.5%) addressed cultural desire.
4. Discussion

Pharmacy educators must be equipped to use evidence-based pedagogical strategies that can help instill cultural intelligence in pharmacy students. To the best of our knowledge, our review is the most comprehensive scoping review of cultural intelligence in pharmacy educators and students to date. A scoping review of cultural competency training by Brottman and colleagues included articles from health professions published between 2005 and 2016, finding that a majority of articles were from medicine and nursing and only 10 were from pharmacy. More recently, Drame and colleagues' review of health disparities and cultural competency training in pharmacy education included 30 articles from the past 20 years with a primary focus on cultural content. Our review did not confine the search date, included 82 pharmacy-related articles, and extracted new variables that provide additional depth and insight into cultural intelligence, such as research methods, country of origin, and pedagogical tools.

A compilation of concrete tools and strategies that can be employed for developing a lifelong commitment to self-reflection and learning is critical since it is neither feasible nor expected for educators to become experts on every culture in the world. Although various pedagogical tools were identified in our search with some interventions (ie, elective courses or study abroad) employed more than others, there remains no standard of best practice for developing cultural intelligence. This, in part, is due to the complexity of culture and the fact that not only is every culture different but even individuals within the same culture will have their own unique lived experience.

Since curriculum resources are often limited, and schools struggle to manage the amount of content in a curriculum, pharmacy schools may find it difficult to incorporate more required courses into already rigorous curricula. This may explain why elective courses were the

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### Table 2
Summary of Pedagogical Tools and their Corresponding Occurrence Rates of Cultural Intelligence Framework Domains found in Included Articles (N = 82) from a Review of Articles on Pedagogical Tools for Developing Cultural Intelligence in Pharmacy Students and Educators.

<table>
<thead>
<tr>
<th>Pedagogical tools</th>
<th>Cultural knowledge</th>
<th>Cultural awareness</th>
<th>Cultural practice</th>
<th>Cultural desire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom</td>
<td>58 (87.9%)</td>
<td>52 (78.8%)</td>
<td>43 (65.2%)</td>
<td>36 (54.5%)</td>
</tr>
<tr>
<td>Experiential</td>
<td>33 (82.5%)</td>
<td>33 (82.5%)</td>
<td>33 (82.5%)</td>
<td>29 (72.5%)</td>
</tr>
<tr>
<td>Other (eg, student organization or social media)</td>
<td>1 (50.0%)</td>
<td>1 (50.0%)</td>
<td>2 (100.0%)</td>
<td>2 (100.0%)</td>
</tr>
<tr>
<td>Structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required course or part of required course</td>
<td>21 (95.5%)</td>
<td>17 (77.3%)</td>
<td>13 (59.1%)</td>
<td>8 (36.4%)</td>
</tr>
<tr>
<td>Elective course</td>
<td>19 (100.0%)</td>
<td>16 (84.2%)</td>
<td>12 (92.3%)</td>
<td>10 (76.9%)</td>
</tr>
<tr>
<td>Study abroad</td>
<td>13 (92.9%)</td>
<td>14 (100.0%)</td>
<td>13 (92.9%)</td>
<td></td>
</tr>
<tr>
<td>APPE</td>
<td>10 (86.4%)</td>
<td>11 (92.3%)</td>
<td>10 (76.9%)</td>
<td></td>
</tr>
<tr>
<td>Curriculum</td>
<td>6 (85.7%)</td>
<td>6 (85.7%)</td>
<td>5 (71.4%)</td>
<td>4 (57.1%)</td>
</tr>
<tr>
<td>Workshop</td>
<td>10 (100.0%)</td>
<td>4 (40.0%)</td>
<td>3 (30.0%)</td>
<td></td>
</tr>
<tr>
<td>Domestic clinical immersion experience</td>
<td>4 (40.0%)</td>
<td>4 (40.0%)</td>
<td>3 (30.0%)</td>
<td></td>
</tr>
<tr>
<td>Other (eg, service or continuing education)</td>
<td>6 (66.7%)</td>
<td>5 (55.6%)</td>
<td>5 (55.6%)</td>
<td>7 (77.8%)</td>
</tr>
</tbody>
</table>

| Activity                                        |                    |                    |                   |                 |
| Lectures                                        | 44 (53.7%)         |                    |                   |                 |
| Reflections                                     | 42 (51.2%)         |                    |                   |                 |
| Discussions                                     | 39 (47.6%)         |                    |                   |                 |
| Videos                                          | 32 (39.0%)         |                    |                   |                 |
| Case-based learning                             | 26 (31.7%)         |                    |                   |                 |
| Presentations                                   | 25 (30.5%)         |                    |                   |                 |
| Readings                                        | 19 (23.2%)         |                    |                   |                 |
| Field excursions                                | 15 (18.3%)         |                    |                   |                 |
| Research projects                               | 15 (18.3%)         |                    |                   |                 |
| Clinics                                         | 14 (17.1%)         |                    |                   |                 |
| Exams                                           | 14 (17.1%)         |                    |                   |                 |
| Journaling                                      | 12 (14.6%)         |                    |                   |                 |
| Role-playing                                    | 11 (13.4%)         |                    |                   |                 |
| Simulations                                     | 10 (12.2%)         |                    |                   |                 |
| Active learning activities                      | 10 (12.2%)         |                    |                   |                 |
| Labs                                            | 10 (12.2%)         |                    |                   |                 |
| Debriefs                                        | 9 (11.0%)          |                    |                   |                 |
| Foreign language learning                       | 9 (11.0%)          |                    |                   |                 |
| Videoconferencing                               | 6 (7.3%)           |                    |                   |                 |
| Panels                                          | 5 (6.1%)           |                    |                   |                 |
| Other (eg, online modules or OSCE)              | 12 (14.6%)         |                    |                   |                 |

### Table 3
Summary of Research Methods of Included Articles (N = 82) from a Review of Articles on Pedagogical Tools for Developing Cultural Intelligence in Pharmacy Students and Educators.

<table>
<thead>
<tr>
<th>Research methods</th>
<th>No. (%) of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of analysis</td>
<td></td>
</tr>
<tr>
<td>Quantitative</td>
<td>32 (39.0%)</td>
</tr>
<tr>
<td>Qualitative</td>
<td>13 (15.9%)</td>
</tr>
<tr>
<td>Multiple methods</td>
<td>26 (31.7%)</td>
</tr>
<tr>
<td>Not reported</td>
<td>11 (13.4%)</td>
</tr>
<tr>
<td>Research outcomes</td>
<td></td>
</tr>
<tr>
<td>Perceptions</td>
<td>64 (78.0%)</td>
</tr>
<tr>
<td>Participation</td>
<td>6 (7.3%)</td>
</tr>
<tr>
<td>Performance</td>
<td>33 (40.2%)</td>
</tr>
<tr>
<td>Cultural intelligence domain</td>
<td></td>
</tr>
<tr>
<td>Cultural knowledge</td>
<td>67 (81.7%)</td>
</tr>
<tr>
<td>Cultural awareness</td>
<td>62 (75.6%)</td>
</tr>
<tr>
<td>Cultural practice</td>
<td>54 (65.9%)</td>
</tr>
<tr>
<td>Cultural desire</td>
<td>48 (58.5%)</td>
</tr>
</tbody>
</table>

* Authors did not study or evaluate described strategy, therefore no data provided. 
second most commonly employed structure for cultural intelligence development found in our review. However, since cultural training is an accreditation requirement for U.S. pharmacy schools, all schools should have compulsory offerings.26 Without these requirements, selection bias is likely to influence enrollment by students who possess higher levels of cultural intelligence, including cultural awareness and cultural desire.27 Students who have lower cultural intelligence may not enroll in these elective courses even though they may benefit the most. When feasible and appropriate, integrating cultural intelligence tools such as culturally diverse patient case articles and panels into extant required courses for all pharmacy students can help mitigate this selection bias while not adding up to students’ course load.

It is also important to note that articles in this review frequently lacked demographic data of their participants. If a pharmacy school’s student population is already diverse, that could ostensibly influence the choice of cultural intelligence pedagogy and the results of their study. Previous studies have found that underrepresented minority pharmacy students placed more emphasis on the importance of cultural diversity training than their White peers.4,19,28 In addition, the school’s geographic location and surrounding community could also impact their students’ cultural intelligence if, for example, the school is located in an urban setting with large ethnic communities.21 Students in those schools may have more cultural encounters in their clinical practice experiences as well as in their daily interactions with educators and other students. Understanding how the diversity of a school intersects with cultural intelligence could be an important next step for research in this area.

Interestingly, about one-third of articles included an interprofessional component concurrently with cultural intelligence. One study, for eg, included medical, nursing, and pharmacy students in an elective course on Russian language and culture and divided students into groups to present on a cultural topic.22 The author points out that both interprofessional collaboration and cultural intelligence focus on many of the same critical skills such as communication, professionalism, and mutual respect. The author also suggests that developing both concurrently may create a synergistic effect and enhance student willingness to seek out both collaboration with other healthcare professionals and new cultural experiences.22 Because the Accreditation Council for Pharmacy Education also lists interprofessional collaboration as a key element of pharmacists’ approach to practice and care, it may be beneficial and efficient for pharmacy schools to target both elements in one intervention.11

A significant barrier to further improvements in cultural intelligence development is the continued lack of articles on educator development in this area. Our review identified only 2 articles out of 82 that included educator development. One was a 2-day train-the-trainer workshop for pharmacy educators, whereas the other was an interprofessional study abroad experience in Ghana for both students and educators from different disciplines but only educators from the pharmacy school participated.22,23 It is possible that through employing pedagogical tools to develop cultural intelligence and engaging with and facilitating culturally intelligent discourse with their students, educators may be able to expand their own ways of thinking via a bidirectional teaching and learning process.22 However, more research needs to be done in this area to identify the most effective tools for educator development. It is intuitive that before educators can teach students how to be culturally intelligent, they must first learn how to be culturally intelligent themselves.

Another challenge faced in comparing the effectiveness of different pedagogical tools is due to lack of standard outcomes and assessment tools for measuring cultural intelligence. A systematic review of cultural competence assessment tools identified 12 tools in pharmacy education.26 Each tool can vary widely and no one tool can effectively assess all aspects of cultural competence in pharmacy students.26 Social desirability bias can also impact students’ responses on survey assessment tools, making them want to seem more culturally intelligent even if they do not actually agree with the statements. Using perception data alongside assessments of observed performance (eg, OSCEs or standardized rubrics) to assess students’ cultural intelligence may help provide a more accurate representation of students’ actual behavior in practice beyond their self-perceived knowledge and attitudes.27 More research is needed to understand which pedagogical tools impact student performance and how this performance translates to patient care once students become practitioners.

Connecting pedagogical tools, strategies, and curriculum to the cultural intelligence framework is important for developing consistency in cultural training in pharmacy education. The review found that most studies addressed cultural knowledge and cultural awareness, whereas fewer addressed cultural practice and cultural desire. Supporting the development of one’s cultural knowledge alone is not enough given that it often leads to a stereotype and ultimately promotes health disparities.2,26,27 Thus, it is imperative to support future pharmacists in cultural practice, which encourages thoughtfulness in how to empathetically and intentionally engage with patients from diverse backgrounds.2 Further, developing cultural desire is important for lifelong learning and creating a culturally intelligent health care workforce that is equipped to understand, appreciate, and interact with diverse populations.

Some limitations of our review include the nature of education development practices regarding the topic of cultural intelligence being more anecdotal in nature. Many strategies and tools that have been employed in current practice may simply not be described or published in the literature. Additionally, because our review included search terms related to cultural intelligence and its iterations, we relied on authors to define their articles as culturally related. Consequently, our search may have missed certain articles if the authors did not use terms related to cultural intelligence. In our included articles, tools may have been missed if not specifically mentioned by the authors. For eg, it would be reasonable to surmise that queries may follow the completion of patient cases; however, if queries were not explicitly stated in the article, then that tool was not included in the results.

Despite these limitations, our review was both extensive and comprehensive. The number of articles meeting the inclusion criteria (more than 8 times the number found by Brottman and colleagues16) suggests that research in this area continues to grow as pharmacy educators and researchers recognize the importance of developing cultural intelligence in their students to provide optimal care for patients. This becomes especially important as healthcare disparities widen and pharmacists’ clinical responsibilities expand. Further use of the cultural intelligence framework is encouraged for continued application and assessment of pedagogical tools for developing cultural intelligence. Future research should focus on long-term learning outcomes to determine pedagogical tools that impart the most enduring effects, help pharmacy educators to fill the current gap in knowledge in that realm, and help in identification of best practice assessment tools to accurately measure student performance.

5. Summary

A multitude of diverse pedagogical tools has been used to develop cultural intelligence in pharmacy students. Educators are encouraged to use multiple assessment tools to obtain more accurate insights on achievement of learning outcomes, both in students’ perceptions of their cultural intelligence and in manifestations of their cultural intelligence in practice. The cultural intelligence framework can be useful to categorize tools and strategies for developing cultural intelligence throughout the entire pharmacy curriculum.

Declaration of Competing Interest

None declared.
Appendix. List of all included articles (N = 82)

See Appendix section here.

Aimee Ho: Conceptualization, Data curation, Formal analysis

Arif Addy 2015 Enhancing interprofessional education: integrating public health and social work perspectives.

Assemi Crawford 2018 Integrating interprofessional education and cultural competency training to address health disparities.

Bertilsson 2016 Bidirectional model for international and local collaboration among student initiatives toward global health education and practice.


Black 2012 A pilot common reading experience to integrate basic and clinical sciences in pharmacy education.


Brown 2008 The design and evaluation of an interprofessional elective course with a cultural competence component.

Brown 2021 International Collaboration as an interdisciplinary approach for the development of a Cultural Competency online module.

Butler 2020 Assessment of a multi-institutional integration of cultural competency activities.

Caillat 2015 Immediate and longitudinal effects of incorporating health literacy and cultural competency into a yearlong pharmacy curriculum.

Chang 2017 Cultural competence education for health professionals from pre-graduation to licensure delivered using facebook: Twelve-month follow-up on a randomized control trial.

Chen 2008 Impact of Patient Empathy Modeling on pharmacy students caring for the underserved.

Cooper 2014 Pharmacy students’ perceptions of cultural competence encounters during practice experiences.

Craig 2015 Collaboration between Schools of Pharmacy and Social Work to promote care for a medically underserved population.

Crawford 2016 A cross sectional and longitudinal study of pharmacy student perceptions of readiness to serve diverse populations.

Dang 2019 Assessment of First-Year Student Pharmacists’ Intercultural Competency Skills Using a Validated Scale and International Scenarios.

Dinkins 2012 A Spanish language module in a first-year pharmaceutical care laboratory course.

Durand 2011 An elective course in cultural competence.

Dudhia 20- 20 Insights from a capstone workshop: An investigation of soon-to-be pharmacists’ readiness to provide culturally competent pharmaceutical care.

Echeverri 2017 Racial dynamics and cultural competence training in medical and pharmacy education.

Ekong 2017 Predisposition for empathy, intercultural sensitivity, and intentions for using motivational interviewing in first-year pharmacy students.

Evans 2006 An elective course in cultural competence for healthcare professionals.

Fujita 2015 Implementing simulated learning modules to improve students’ pharmacy practice skills and professionalism.

Gililand 2016 Building cultural sensitivity and interprofessional collaboration through a study abroad experience.

Godwin 2017 An enhanced appreciation of cultural competency: Applying knowledge at home and abroad.

Gourley 2013 An international capstone experience for pharmacy students.

Greene 2014 “Providing care across a language barrier” - A program at the intersection of interprofessional education and co-curricular engagement.

Haak 2008 Engaging pharmacy students with diverse patient populations to improve cultural competence.

Haak 2012 Teaching cultural competency through a pharmacy skills and applications course series.

Hammond 20- 10 Global health outreach—an international advanced pharmacy practice experience.

Heffernan 201- 3 The cross-cultural field excursion initiative: An educational approach to promote cultural competency in student pharmacists.

Hutcheson 2014 An anthropological approach to teaching health sciences students cultural competency in a field school program.

Johnson 2017 International service learning and interprofessional education in Ecuador: Findings from a phenomenology study with students from four professions.


Kansan 2013 International service learning and community engagement course contributes to cultural competency.

Kearney 2013 Impact of a service learning course on first-year pharmacy students’ learning outcomes.

Knockel 2019 Incorporating LGBTQ health into the curriculum: Assessment of student pharmacists’ knowledge and comfort level in caring for transgender patients.

Leach 2019 Student pharmacists’ perceptions of transgender health management.

Lee 2013 Students delivering health care to a vulnerable Appalachian population through interprofessional service learning.

Lee 2019 Implementation and Evaluation of a Recurring Interdisciplinary Community Health Fair in a Remote U.S.-Mexico Border Community.

Lewis 2015 Developing a Multicultural Health Practices and Disparities Elective Course.

Liu 2015 Design and evaluation of interprofessional cross-cultural communication sessions.

Lion 2010 Learning through self-reflection: understanding communication barriers faced by a cross-cultural cohort of pharmacy students.

Lorenz 2017 An enhanced appreciation of cultural competency: Developing culturally competent practitioners.

Lucas 2021 Pharmacy students’ learning and reflections to inform the development of the #Working Respectfully with Aboriginal Peoples (WRAP) Toolkit.

Mandel 2016 Bidirectional model for international and local collaboration among student initiatives toward global health education and practice.

Mathews 2011 Role-reversal exercise with Deaf Strong Hospital to teach communication competency and cultural awareness.

McElfish 2018 Integrating interprofessional education and cultural competency training to address health disparities.


Musolino 2009 Mutual respect in healthcare: assessing cultural competence for the University of Utah Interdisciplinary Health Sciences.

Muzumdar 20- 10 Cultural competence knowledge and confidence after classroom activities.

References

1. Livermore DA. The cultural intelligence difference: master the one skill you can’t do without in today’s Global Economy. AMACOM Book Company, American Management Association; 2011.


*Article was also used as a reference in the review.