

*American Journal of Pharmaceutical Education* 2017; 81 (7) Article 5961.

## REVIEW

## A Review of Contemporary Diversity Literature in Pharmacy Education

Antonio A. Bush, PhD,<sup>a</sup> Jacqueline E. McLaughlin, PhD,<sup>a</sup> Carla White, BS Pharm<sup>a,b</sup><sup>a</sup> Division of Practice Advancement and Clinical Education, UNC Eshelman School of Pharmacy, Chapel Hill, North Carolina<sup>b</sup> Office of Innovative Leadership and Diversity, UNC Eshelman School of Pharmacy, Chapel Hill, North Carolina

Submitted July 28, 2016; accepted October 12, 2016; published September 2017.

**Objective.** To review and categorize published educational research concerning diversity within colleges and schools of pharmacy.**Methods.** The Three Models of Organizational Diversity Capabilities in Higher Education framework was used to guide the review efforts. Of the 593 documents retrieved, 11 met the inclusion criteria for review. Each included article was individually reviewed and coded according to the framework.**Results.** The reviewed articles were primarily influenced by contemporary drivers of change (eg, shifting demographics in the United States), focused on enhancing the compositional diversity of colleges and schools of pharmacy, examined the experiences of underrepresented groups, and suggested process improvement recommendations.**Conclusion.** There is limited published educational research concerning diversity within schools and colleges of pharmacy. Contemporary drivers of change are influencing this research, but more attention must be given to the focus of the research, individuals targeted, and recommendations suggested.**Keywords:** diversity, inclusion, review, pharmacy education

## INTRODUCTION

“All of our schools and colleges should strive to be model institutions with respect to commitment and clarity of mission with regard to diversity. Achieving true diversity in all dimensions will result in excellence for all who are a part of the organization, and, equally important, for those we serve.”<sup>1</sup>

In recent years, there have been numerous calls to examine diversity in pharmacy.<sup>1-7</sup> A special report by the American Association of Colleges of Pharmacy’s (AACP) Argus Commission, for example, indicated that more work must be done to demonstrate a commitment to diversity.<sup>1</sup> In a manuscript linking diversity and professionalism, Chisholm-Burns asserts, “. . .one of the missing links to professionalism is ethnically and culturally diverse student and faculty bodies within colleges of pharmacy.”<sup>2</sup> Her work is continued in a manuscript calling to increase faculty diversity in pharmacy and providing strategies do so.<sup>3</sup> An article by Hayes provides compelling data acknowledging the rapid racial and ethnic diversification of the United States, sheds light on the lack of minorities in health care, and suggests, though progress

has been made, there are opportunities to increase the recruitment and graduation rates for underrepresented minorities in pharmacy.<sup>4</sup> Hayes’s article ends with a call to action to the field in stating that “. . .the pharmacy academy must take ownership of the [underrepresented minority] issue and lead the transformation of the pharmacy workforce.”<sup>4</sup> Nkansah and colleagues’ article provides a detailed review of the benefits of diversity in academic institutions and suggests best practices to foster and manage diversity in schools of pharmacy.<sup>5</sup> These articles are a few of the several contemporary calls to action to shed light on the importance of diversity in pharmacy education.<sup>1-7</sup>

In the past decade, diversity-related research in pharmacy has focused, to a considerable degree, on preparing student pharmacists to interact with diverse groups of patients.<sup>8,9</sup> However, as Chisolm-Burns emphasizes, “. . .colleges of pharmacy should not settle for cultural competency training as the solution to the lack of diversity...because it is not.”<sup>3</sup> While preparing students to treat increasingly diverse patient populations is critical, we must also consider how the diversity of our institutions impacts student development and educational outcomes. This assertion does not come without awareness and recognition of the progress we’ve made in our country, higher education, and the field of pharmacy over the past 200 years.<sup>1,10</sup> While there has been progress, opportunities

---

**Corresponding Author:** Jacqueline E. McLaughlin, UNC Eshelman School of Pharmacy, CB #7574, Beard 326, Chapel Hill, NC 27599-7574. Tel: 919-966-4557. E-mail: [jacqui\\_mclaughlin@unc.edu](mailto:jacqui_mclaughlin@unc.edu)

for further advancement exist, and as Hayes states, we must “. . . actively enlist in this campaign for the benefit of our profession. . . .”<sup>4</sup> At this point, examining educational research concerning the diversity of pharmacy education is critical to both understand where we stand as a profession and provide direction for future work.

Educational research can be defined as “. . . the systematic and critical investigation of any aspect of education that advances knowledge and benefits society by allowing people to live fuller lives.”<sup>11,12</sup> There has been a significant increase in educational research to meet rising calls in academia to make data-informed decisions and evidence-based quality improvement, among others.<sup>12</sup> Educational research may be utilized to understand the progression of diversity in pharmacy education and should play a key role in informing practice and policy-makers within pharmacy education.<sup>12</sup> To this end, work must be done to determine where we stand regarding diversity-related research within pharmacy.

The purpose of this study was to review published educational research concerning diversity within colleges and schools of pharmacy. The goal of this review was to inform discussion and research in pharmacy education concerning emergent issues of diversity.<sup>13</sup> Four research questions were explored:

1. What influences diversity research in pharmacy education?
2. What are the foci of diversity research in pharmacy education?
3. Who are the targets of diversity research in pharmacy education?
4. What recommendations are suggested in diversity research in pharmacy education?

### **Theoretical Framework**

This study utilized the Three Models of Organizational Diversity Capabilities in Higher Education framework to review and categorize diversity-related research within pharmacy education.<sup>14-16</sup> This framework, an extension of scholarship examining several models of diversity,<sup>17-19</sup> shows the complexity of diversity in higher education.<sup>15</sup> The three models incorporated within this framework are representative of three historical timeframes in the United States and include: Affirmative Action and Equity (AAE); Multicultural and Inclusion Diversity (MID); and Learning, Diversity, and Research (LDR). Together, these models illustrate how diversity has evolved from an emphasis on historically underrepresented groups to a more holistic approach integrating the entire institutional community.<sup>16</sup>

Emerging in the 1950s-1970s from events such as the Civil Rights Movement and shifting laws and

policies, the AAE model portrays a timeframe emphasizing the elimination of explicit barriers developed to exclude federally protected groups from having access to and working in higher education institutions.<sup>20</sup> Intended as a “. . . temporary tool to fulfill a legal, moral, and social responsibility,”<sup>15</sup> this model focuses on changing institutional profiles. However, little focus was placed on changing the homogeneous culture in higher education within the AAE model.<sup>15</sup>

Launched in the 1960s and 1970s due to several empowerment movements, the MID model extends the AAE model’s aims by highlighting the importance of fostering a nurturing environment and extending such services to previously ignored diverse social groups.<sup>15,16</sup>

Representative of the late 1990s and 2000s, the LDR model defines “[the] most recent developments in diversity discourse, namely the growing understanding of diversity’s importance to educational outcomes.”<sup>16</sup> As opposed to focusing primarily on minorities, this model is aimed toward majority and minority stakeholders (eg, students, faculty, staff, and administrators) with a specific emphasis of incorporating diversity into the curriculum and research.<sup>16</sup>

In summary, the AAE model focuses on composition and access, the MID model emphasizes providing a nurturing environment, and the LDR model embraces infusing diversity into the curriculum and faculty research with a focus on both majority and minority stakeholders.<sup>15,16</sup>

In this framework, diversity capabilities are conceptualized according to five organizational dimensions: drivers of change, definition, character, target of efforts, and primary organizational capabilities. The drivers of change are depicted by factors leading to the development of each model such as the enforcement of laws and policies, the rise of cultural and political movements, and shifting demographics within higher education and abroad. The definition details the organizational focus of each model. The models focus change intentions on the groups identified in the targets of efforts dimension. The character and primary organizational capability dimensions provide strategies, programs, and initiatives to address the diversity challenges within each model.

### **METHODS**

#### **Literature Search Process**

*Initial Search.* In the early stages of a literature review, narrow problem development can threaten the validity of the study.<sup>21,22</sup> Accordingly, our initial search included broad search terms acquired from primary literature. Our initial search terms were: [pharmacy AND diversity OR equity OR inclusion OR (institutional culture

or institutional climate) OR (identity or identities) OR (multicult\*). These terms were derived from the 2013 AACP Argus Report, *Diversity and Inclusion in Pharmacy Education*<sup>1</sup> (ie, diversity, equity, inclusion, institutional culture, identity, and identities) and Williams' text, *Strategic Diversity Leadership: Activating Change and Transformation in Higher Education*,<sup>23</sup> in which four essential terms were provided for academic leaders (ie, diversity, equity, inclusion, and multiculturalism). In collaboration with the university's health sciences librarian, we identified and used the following databases: Educational Resource Information Center (ERIC), PubMed, and International Pharmaceutical Abstracts (IPA). We included scholarship from 1990 to 2016, which aligned with Williams' LDR model.<sup>14,15</sup>

*Search Modification.* Our initial search yielded numerous documents from ERIC (57,993), PubMed (294,895), and IPA (6,019), prompting the researchers to narrow the search to include the terms most relevant to the study (ie, diversity, research, and education) and adding AJPE via the ProQuest database. The search returned 593 documents using the following search terms: [(pharmacy AND (diversity) and (education OR educational OR educating)] (Figure 1).

*Inclusion Criteria.* The criteria for inclusion were: aligned with the study's characterization of diversity; quantitative and/or qualitative data was collected and analyzed; focused exclusively within the field of pharmacy; published between 1990 and 2016 (February); published in the English language; and a research or systematic review article. Duplicates were removed and two researchers engaged in independent article review, comparison of included and excluded articles, and consensus reaching. This process yielded a total of 11 peer-reviewed articles.

### **Coding Process**

The 11 articles were independently coded by two researchers. Coding was used to generate labels for segments of the text and capture meaning.<sup>24</sup> For each of the five organizational dimensions of the *Organizational Diversity Capabilities in Higher Education* framework,<sup>16</sup> an article was coded according to the three models of diversity (ie, AAE, MID, and LDR) (Table 1). For example, if a study was influenced by workforce needs and the diversity movement it was coded as LDR for the Driver of Change dimension. To answer our research questions, the framework dimensions were categorized as follows: influence of research (ie, drivers of change), foci of research (ie, definition), targets of research (ie, target of efforts), and recommendations suggested by the researchers (ie, character and primary organizational capability).

Each researcher generated 60 codes (ie, a code for each of the five dimensions for each of the 12 articles). The researchers met to review inconsistencies and negotiate consensus.<sup>25</sup> Since codes were generated at the level of the dimension, it was possible for the three models to appear concurrently within a single dimension for a specific article.<sup>16</sup> Further, due to the overlap of federally protected groups in this dimension for the AAE and MID models, the researchers agreed to combine the models for this dimension during the coding process resulting in a modification of the original framework which separated federally protected groups, minorities, and other socially bounded social identity groups.

### **RESULTS**

The researchers agreed on 87% (n = 48/55) of the codes and partially agreed on 5% (n=3/55) of the codes. Upon discussion, consensus was reached on all remaining items. Table 2 details the findings for each article, according to dimension and model.

*RQ1: Drivers of Change.* All of the research articles were driven by factors from the LDR model. The articles were clearly framed with considerable emphasis on the influences of the changing demographics in the U.S. and abroad and the need to diversify the workforce.

*RQ2: Foci of Research.* All of the articles were situated in the AAE model, with a primary focus on enhancing the compositional diversity of colleges and schools of pharmacy. For example, one study examined a variety of factors (eg, race and gender) to understand how these factors were associated with pre-NAPLEX scores while another study sought to determine whether participation in a pipeline program affected whether underrepresented students chose pharmacy as a career. However, two of the articles also incorporated elements of the MID model. For example, one article examined the compositional make-up of historically Black colleges of pharmacy (HBCPs) and predominantly White colleges of pharmacy (PWCPs) as well as African American students' perceived levels of satisfaction and importance of institutional programs and support. Thus, in addition to focusing on structural diversity, these articles explored the dynamics of creating nurturing environments for diverse groups of minorities.

*RQ3: Targets of Research.* The targets of the research articles primarily aligned with the AAE and MID models (55%), examining the composition and experiences of underrepresented groups such as women and racial minorities. Five of the 11 articles (45%) were coded to the LDR model due to the inclusion of majority and minority groups primarily through demographic comparisons.

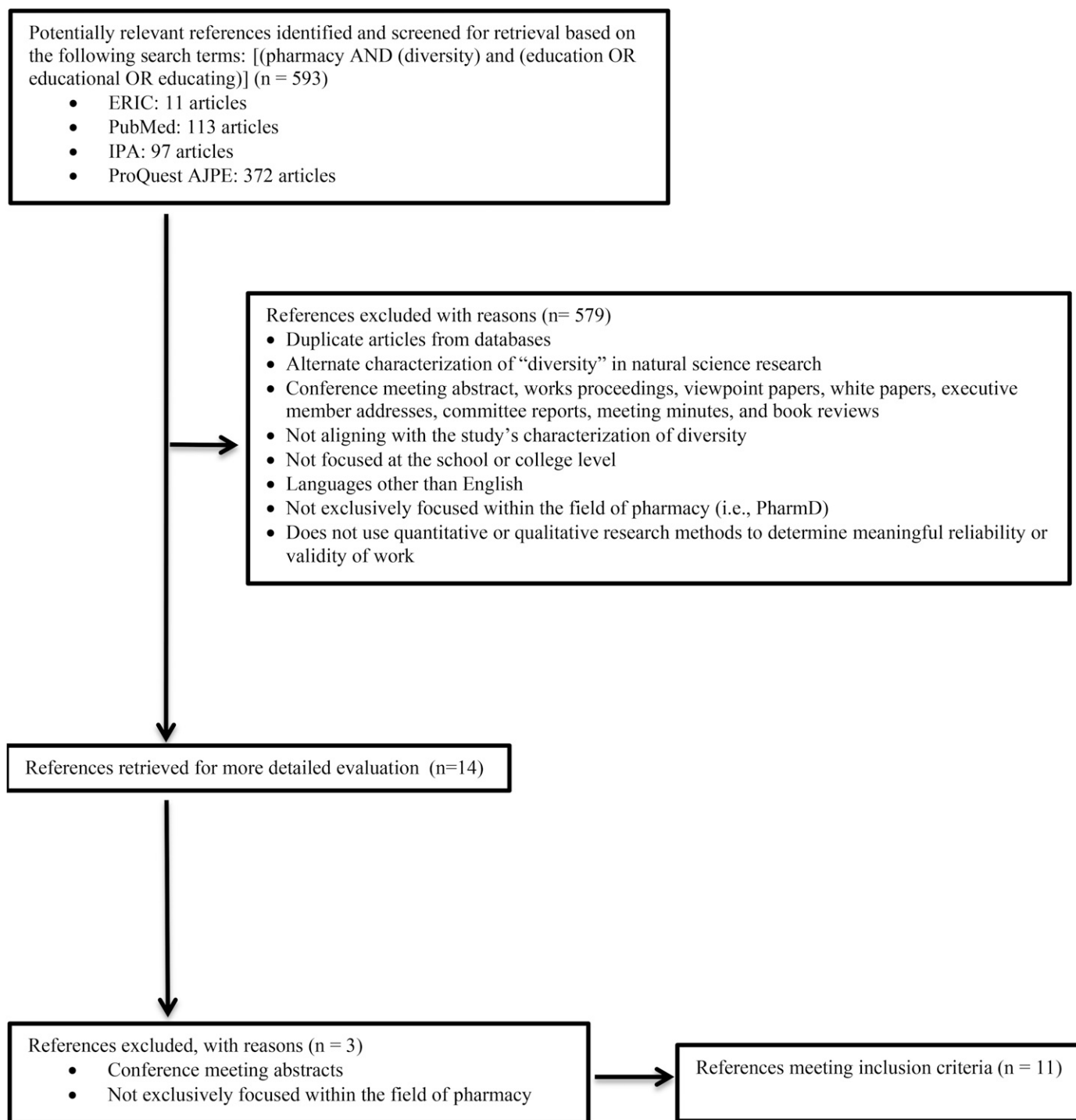


Figure 1. Flow Chart for a Review of Diversity Literature in Pharmacy Education.

*RQ4: Recommendations.* Nearly all of the articles (91%) were coded to the AAE model due to process improvement recommendations such as revamping recruiting approaches and organizational capabilities such as pipeline and equal opportunity programs. Recommendations from two articles (18%) were also coded to the MID model due to the emphasis on creating nurturing and inclusive environments.

One of the aforementioned articles aligning with the MID model suggested increasing resources to creating a campus environment to support diverse constituents at both the college and institutional level. Four articles (36%) reinforced the idea of diversity as a vital component to student learning through intentional interactions in a heterogeneous environment and were coded to the LDR model.

Table 1. Applied Coding Framework: Three Models of Organizational Diversity Capabilities in Higher Education<sup>15,16</sup> Categorized According to the Research Questions for This Study<sup>a</sup>

Research Questions	Launching Point		1950s, 1960s, and 1970s	1960s and 1970s	Late 1990s and 2000s
	Dimension	Affirmative Action and Equity Model (AAE)	Multicultural and Inclusion Diversity Model (MID)	Learning, Diversity, and Research Model (LDR)	
What influences diversity research in pharmacy education?	Drivers of Change	Civil rights movement; shifting laws, policies, and social movements	Broader social justice movements, campus social protests, shifting legal policies	Diversity movement, changing demographics, workforce needs, persistent inequalities, legal and political dynamics, global economy	
What are the foci of diversity research in pharmacy education?	Definition	Focused efforts designed to enhance the compositional diversity of an institution's faculty, staff, and students, and to eliminate discriminatory practices (ie, Profile Change)	Institutional efforts designed to nurture and promote the culture of racially and ethnically diverse minorities, women, members of the LGBT community, and diverse social identity groups (ie, Supporting diverse constituents)	Focused agenda centered on infusing diversity into an institution's curriculum and its research priorities (ie, Psychosocial and cognitive development)	
Who are the targets of diversity research in pharmacy education?	Target of Efforts	Federally protected groups, minorities, LGBT members, faith-based communities, women and other bounded social identity groups	Federally protected groups, minorities, LGBT members, faith-based communities, women and other bounded social identity groups	Both majority and minority groups	
What recommendations are suggested in diversity research in pharmacy?	Character	Elimination of exclusionary barriers, remediation, process improvement and diversity as a positive factor among several used in admission and hiring decisions	Providing diversity services, fostering community and inclusion on campus, and conducting research and teaching courses in the diversity field	Diversity as a vital component of student learning and faculty research	
	Primary Organizational Capability	Affirmative action offices, plans, and policy statements' race-conscious admissions and financial aid programs; equal opportunity programs like Upward Bound, Talent Search, etc.	Multicultural affairs offices, minority affairs offices, cultural centers, lactation lounges, reflection/prayer areas, diverse student organizations diversity affinity organizations for faculty and staff	Centralized diversity requirements, ethnic studies, gender studies, international studies, diversity programs like Intergroup Relations Offices, study abroad and service learning initiatives	

<sup>a</sup>Framework modified by researchers to combine AAE/MID models in the Target of Efforts dimension (RQ 3)

Table 2. Final Coding Results for Each Article. The Five Dimensions of the Organizational Diversity Capabilities in Higher Education Framework Were Coded According to AAE, MID, and LDR Models

Article (de-identified)	Drivers of Change	Definition	Target of Efforts	Character	Primary Organizational Capability
Article 1	LDR	AAE-MID	LDR	AAE	AAE
Article 2	LDR	AAE	LDR	LDR	***
Article 3	LDR	AAE	AAE/MID (Combined)	AAE - LDR	AAE
Article 4	LDR	AAE	AAE/MID (Combined)	AAE	AAE
Article 5	LDR	AAE	LDR	AAE-MID	AAE
Article 6	LDR	AAE	LDR	AAE-LDR	AAE
Article 7	LDR	AAE	LDR	AAE	AAE
Article 8	LDR	AAE	AAE/MID (Combined)	AAE	AAE
Article 9	LDR	AAE-MID	AAE/MID (Combined)	AAE - MID - LDR	AAE - MID
Article 10	LDR	AAE	AAE/MID (Combined)	AAE	AAE
Article 11	LDR	AAE	AAE/MID (Combined)	AAE	AAE
<b>Total</b>	AAE = 0 MID = 0 LDR = 11	AAE = 11 MID = 2 LDR = 0	AAE/MID (Combined) = 6 LDR = 5	AAE = 10 MID = 2 LDR = 4	AAE = 10 MID = 1 LDR = 0

Abbreviations: AAE=Affirmative Action and Equity Model; MID=Multicultural and Inclusion Diversity Model; LDR= Learning, Diversity, and Research Model; AAE/MID (Combined) – AAE and MID were combined because of the overlap of federally protected groups (eg, race and sex) in the Target of Efforts Dimension

\*\*\*Reference was not coded to Primary Organizational Capability

## DISCUSSION

This review examined diversity-related pharmacy educational research through the lens of three historically-oriented organizational models of diversity in higher education. The results revealed that diversity-related educational pharmacy research is influenced by contemporary drivers of change primarily linked to the LDR model, yet the research was predominantly focused on compositional issues dating back to the 60s and early 70s (ie, AAE model). Further, the targets of the selected research articles reveal that there is a traditional conceptualization of diversity when we consider the participants or stakeholders (eg, students, faculty, staff, and administrators). Finally, the recommendations provided in the manuscripts are limited to older models of organizational diversity that are currently in place. These findings provide important implications for practice and key directions for future research in pharmacy education.

First, proponents of diversity in pharmacy education have noted the lack of tools available “. . .to guide pharmacy administrators and faculty members in nurturing and developing a culture of diversity. . .”<sup>5</sup> and this study, too, sheds light on the limited work in this area. With only 11 research articles meeting the inclusion criteria, this study provides insight into why scholarship, viewpoint editorials, and special reports examining diversity in pharmacy education often rely on other fields such as higher education, business, medicine, and nursing.<sup>1,5</sup> Further, 10 of the 11 research articles were retrieved from AJPE. We postulate this finding may be due to the

review’s emphasis on research articles related to pharmacy education.

Second, it is relevant to note that the majority of the documents retrieved in the initial search were eliminated due to an alternative conceptualization of diversity relating to natural science research. For example, an article was retrieved in our initial search because the of the study’s use of the term diversity, as exemplified in the following statement: “The structural diversity and biological activities of fungal indole diterpenes (IDTs) are generated in large part by the IDT cyclases (IDTCs).”<sup>38</sup> This study, though it used the phrase “structural diversity,” was excluded, as were the other articles with similarly contrasting conceptualizations of diversity. This suggests that diversity is a broadly conceptualized and salient issue in pharmacy and pharmaceutical sciences and that scholars are likely to understand the concept of diversity at its basic tenet. As efforts continue in the area of diversity, consideration should be given to how scholars conceptualize and understand diversity to inform strategies that could be used to adapt this knowledge to contribute to the betterment of diversity within their respective schools and colleges of pharmacy.

Additionally, though some articles focused on creating nurturing environments for diverse groups of minorities, the research was largely situated around enhancing compositional diversity, which is the primary focus of the AAE model. According to Williams and Wade-Golden, the AAE model “. . .does little to change the norms of

a traditional culture not originally intended for minorities, women, and other federally protected groups.”<sup>16</sup> Enhancing the compositional diversity, or the structural diversity<sup>26</sup> is often the first step in creating a nurturing environment as diversity must be “present for changes in perceptions and behaviors to occur.”<sup>27</sup> However, increasing the number of diverse individuals in a school or college of pharmacy is not sufficient and this act independent of deeper measures will not promote an improved climate.<sup>26,27</sup> Thus, pharmacy educators should consider advancing the field’s efforts by aligning organizational practices with the MID model to authentically nurture and promote diverse social groups and with the LDR model to infuse diversity into the curriculum and research-related efforts.<sup>14-16</sup>

There has been a great deal of scholarship exploring the need for diversity within higher education through both curricular and co-curricular experiences demonstrating benefits for society, teaching, research, faculty, and students.<sup>26,28-30</sup> These benefits range from developing democratic members of society to producing more creative and innovative thinkers.<sup>31-34</sup> Curricular implementations of diversity can be utilized as strategic educational tools to provide relevant, realistic and contemporary educational experiences that influence learning outcomes and the preparedness of future health science professionals. Exposure to a broader range of perspectives shaped by different backgrounds, experiences and views can facilitate thinking beyond one’s own experiences and interactions.<sup>32-34</sup> Diverse individuals often have different solutions to problems, interpret and analyze situations differently, and resolve issues in different ways.<sup>33</sup> Access to a broader range of perspectives can serve as a natural primer for active learning, critical thinking, building an inclusive classroom climate and the leadership capacity of students. Given the growing body of research demonstrating the importance and impact of diverse learning environments, the lack of pharmacy education research in this area is somewhat surprising. Advancing our efforts to promote these strategies will be important in fostering innovations for education, research and practice as well as delivering culturally competent health care.

In addition to aligning practices with the MID model and the curriculum with the LDR model, scholars should also consider contemporary perspectives in diversity research that include majority and minority stakeholders, which embodies the true spirit of the LDR model. Some diversity-related research in pharmacy education included groups beyond those that are federally protected, as seen by the five articles that targeted majority and minority groups. In most instances, however, majority stakeholders were included only as demographic comparisons

to minorities. Future research should extend beyond compositional comparisons to include other aspects of diversity that may be related to core diversity goals such as intellectual and cognitive diversity. This will be critical as educators and scholars strive to define diversity and its key components, evaluate the impact of diversity initiatives, and use evidence-based practice to optimize outcomes for all students and stakeholders.

This review suggests that the influences driving diversity-related research in pharmacy education align with the LDR model. Scholars in this domain point to progressive diversity movements, understand the significance of the country’s changing demographics, and realize the importance of examining and diversifying the workforce to provide quality patient care. These articles provided practice and research recommendations spanning all three models and simultaneously approached this matter by both acknowledging the current landscape and eyeing the future. However, it remains unclear why the foci and targets in diversity-related research in pharmacy have not progressed in the same direction. As our social and institutional diversity expands, consideration should be given to expanding and characterizing the concept of diversity within educational research that is designed to explore contemporary diversity and its impact on educational outcomes.

As we advocate for additional research in this area, it is imperative that we acknowledge and applaud those who have engaged in this important work. Their work provides a strong foundation for future scholarship. While supporting the work that has been done, we must also acknowledge that conducting diversity-related research is not without challenges. For example, when conducting quantitative research with diverse groups, an investigator may be challenged when identifying, describing, and selecting an appropriate sample (eg, race, socioeconomic status, and sexual orientation) due to the heterogeneity within groups.<sup>35</sup> When considering qualitative research, methods such as focus groups may prove to be challenging when discussing sensitive topics.<sup>36</sup> Such issues may be alleviated with increased understanding of diverse groups and gaining trust of the participants. Those individuals considering undertaking diversity research should consider the aforementioned challenges among others that may arise.

Throughout the discussion, directions for future research aligning with Williams and Clowney’s framework are provided. A modified list from Museus and colleagues<sup>37</sup> suggest additional areas spanning this framework that scholars should consider pursuing. Such areas include documenting how federal and state policies reinforce inequity; examining relationships between

environments that are culturally engaging and student outcomes; understanding and challenging campus structures while providing knowledge to efficiently reorganize to benefit diversity; and examining strategies to effectively use data to aid in institutional transformations, programming, and policy changes toward increased diversity.

This study is the first study known to apply Williams and Clowney's Three Models of Organizational Diversity Capabilities in Higher Education framework to guide a review.<sup>15</sup> This framework was developed as a tool for senior academic leaders and other individuals (eg, faculty, staff, students, and committee members) engaged in the process of recognizing, understanding, and improving diversity in higher education through strategic planning efforts.<sup>15</sup> This framework has been especially important during the past decade as the development of chief diversity officers (CDOs) and other diversity-related roles have been on the rise. Williams and Clowney's work provides valuable insight to those in these increasingly vital roles as they navigate organizational, political, cultural, legal, and ethical boundaries and provided a contemporary and relevant framework for guiding this study.

While this study generated critical insight into pharmacy education diversity-related research, it is not without limitations. First, this work was guided by a specific framework with clearly defined dimensions and models. As a part of this study, we introduced a modified version of the framework, with the merger of AAE and MID in "targets of efforts" due to overlaps within the descriptions. Future researchers may find additional justifiable opportunities to either merge, or disintegrate portions of the framework. Second, this review excluded research using an alternate conceptualization of diversity (eg, chemical diversity in pharmaceutical science). Understanding how other applications of the term "diversity" intersect with pharmacy education may warrant a closer look. Third, we limited this review to diversity-related research in pharmacy education. Next steps should consider expanding the scope to include other health professions or the pharmacy workplace to better understand the current landscape of diversity literature across broader contexts.

## CONCLUSION

Despite efforts by pharmacy schools to consider diversity and inclusion and the direct impact on the communities they serve, representation in pharmacy and the pharmaceutical sciences has not been adequately addressed. This review of diversity research in pharmacy education explored the status of diversity within the field and provided recommendations for future directions.

This study revealed that contemporary drivers of change are influencing diversity-related research in pharmacy education, but more attention must be given to the foci and targets of this research as well as the recommendations suggested. Though there have been numerous calls for diversity-related research, the limited scholarship in this area suggests that we must direct more attention to and engage more fully in this important work. This work provides a broader perspective of where the field stands, helps us better understand the current landscape of diversity literature across health science disciplines, and provides a framework to establish metrics, evaluate the effectiveness of diversity initiatives to prepare schools or programs, and make data-driven decisions for improvement and leveraging resources.

## REFERENCES

1. Yanchick VA, Baldwin JN, Bootman JL, Carter RA, Crabtree BL, Maine LL. Report of the 2013-2014 Argus Commission: Diversity and inclusion in pharmacy education. *Am J Pharm Educ.* 2014;78(10):Article S21.
2. Chisholm MA. Diversity: a missing link to professionalism. *Am J Pharm Educ.* 2004;68(5):Article 120.
3. Chisholm-Burns MA. Diversifying the team. *Am J Pharm Educ.* 2008;72(2):Article 44.
4. Hayes B. Increasing the representation of underrepresented minority groups in US colleges and schools of pharmacy. *Am J Pharm Educ.* 2008;72(1):Article 14.
5. Nkansah NT, Youmans SL, Agness CF, Assemi M. Fostering and managing diversity in schools of pharmacy. *Am J Pharm Educ.* 2009;73(8):Article 152.
6. Maine LL. Diversity, value, and communications. *Am J Pharm Educ.* 2003;67(4):Article 126.
7. American College of Clinical Pharmacy, O'Connell MB, Rodriguez de Bittner M, et al. Cultural competency in health care and its implications for pharmacy part 3A: emphasis on pharmacy education, curriculums, and future directions. *Pharmacotherapy.* 2013;33(12):e347-e367.
8. Brown CM, Doan QD. Pharmacy students' perceptions about the need for multicultural education. *Am J Pharm Educ.* 1998;62(3):310-315.
9. Ross LA, Bloodworth LS. Patient-centered health care using pharmacist-delivered medication therapy management in rural Mississippi. *J Am Pharm Assoc (2003).* 2012;52(6):802-809.
10. Chisholm-Burns MA, Spivey CA, Billheimer D, et al. Multi-institutional study of women and underrepresented minority faculty members in academic pharmacy. *Am J Pharm Educ.* 2012;76(1): Article 7.
11. McMillan J. *Educational Research: Fundamentals for the Consumer.* 6<sup>th</sup> ed. New York, NY: Pearson; 2012:415.
12. McLaughlin JE, Dean MJ, Mumper RJ, Blouin RA, Roth MT. A roadmap for educational research in pharmacy. *Am J Pharm Educ.* 2013;77(10):Article 218.
13. Webster J, Watson RT. Analyzing the past to prepare for the future: writing a literature review. *MIS Q.* 2002;26(2).
14. Williams DA. *A Matter of Excellence: A Guide to Strategic Diversity Leadership and Accountability in Higher Education.* Washington, DC: American Council on Education; 2013.



15. Williams DA, Clowney C. Strategic planning for diversity and organizational change: A primer for higher-education leadership. *Eff Pract Acad Leaders*. 2007;2(1554-0464):1-16.
16. Williams D, Wade-Golden KC. *The Chief Diversity Officer: A Primer for College and University Presidents*. Washington, DC: American Council on Education; 2007.
17. Cox T. *Creating the Multicultural Organization: A Strategy for Capturing the Power of Diversity*. San Francisco, CA: Jossey-Bass; 2001.
18. Loden M. *Implementing Diversity*. Chicago, IL: Irwin Professional; 1996.
19. Norton JR, Fox RE. *The Change Equation: Capitalizing on Diversity for Effective Organizational Change*. Washington, DC: Magination Press; 1997.
20. Digest E, Washington V, Harvey WB. *Affirmative Rhetoric, Negative Action: African-American and Hispanic Faculty at Predominantly White Institutions*. Washington, DC: School of Education and Human Development, George Washington University; 1989.
21. McGaghie WC. Varieties of Integrative Scholarship. *Acad Med*. 2015;90(3):294-302.
22. Cooper HM. *Integrating Research: A Guide for Literature Reviews*. 2nd ed. Beverly Hills, CA: Sage Publications; 1989.
23. Williams DA. *Strategic Diversity Leadership: Activating Change and Transformation in Higher Education*. Sterling, VA: Stylus Publishing; 2013.
24. Hesse-Biber SN, Leavy P. *The Practice of Qualitative Research*. 2nd ed. Los Angeles, CA: SAGE Publications; 2011.
25. Bradley EH, Curry LA, Devers KJ. Qualitative data analysis for health services research: Developing taxonomy, themes, and theory. *Health Serv Res*. 2007;42(4):1758-1772.
26. Hurtado S, Milem JF, Clayton-Pedersen AR, Allen WR. *Enacting Diverse Learning Environments: Improving the Climate for Racial/Ethnic Diversity in Higher Education*. San Francisco, CA: Jossey-Bass; 1999.
27. Hurtado S, Arellano L, Griffin KA, Cuellar M. Assessing the value of climate assessments: progress and future directions. *J Divers High Educ*. 2008;1(4):204-221.
28. Chang MJ, Astin AW, Kim D. Cross-racial interaction among Undergraduates: Some consequences, causes, and patterns. *Res High Educ*. 2004;45(5):529-553.
29. Nelson Laird TF. College students' experiences with diversity and their effects on academic self-confidence, social agency, and disposition toward critical thinking. *Res High Educ*. 2005;46(4):365-387.
30. Haslerig S, Bernhard LM, Fuentes MV, Panter AT, Daye CE, Allen WR. A compelling interest: activating the benefits of classroom-level diversity. *J Divers High Educ*. 2013;6(3):158-173.
31. Deo ME. The promise of Grutter: diverse interactions at the University of Michigan Law School. *Michigan J Race Law*. 2011;17(1).
32. Fine E, Handelsman J. Benefits and challenges of diversity in academic settings. Brochure prepared for the Women in Science & Engineering Leadership Institute (WISELI). 2010.
33. Medin DL, Lee CD. Diversity makes better science. *Assoc Psychol Sci Obs*. 2012;25(5).
34. Gurin P, Nagda BA, Lopez GE. The benefits of diversity in education for democratic citizenship. *J Soc Issues*. 2004;60(1):17-34.
35. Banks JA, Banks CAM. *Handbook of Research on Multicultural Education*. 2<sup>nd</sup> ed. San Francisco, CA: Jossey-Bass; 2004.
36. Halcomb EJ, Gholizadeh L, Digiacomio M, Phillips J, Davidson PM. Literature review: considerations in undertaking focus group research with culturally and linguistically diverse groups. *J Clin Nurs*. 2007;16(6):1000-1011.
37. Museus SD, Ledesma MC, Parker TL. Racism and Racial Equity in Higher Education. *ASHE High Educ Rep*. 2015;42(1):1-112.
38. Tang MC, Lin H-C, Li D, et al. Discovery of unclustered fungal indole diterpene biosynthetic pathways through combinatorial pathway reassembly in engineered yeast. *J Am Chem Soc*. 2015;137(43):13724-13727.