

# Developing Workforce Diversity in the Health Professions: A Social Justice Perspective

Kirsten Wilbur<sup>a,\*</sup>, Cyndy Snyder<sup>b</sup>, Alison C. Essary<sup>c</sup>, Swapna Reddy<sup>d,e,f</sup>,  
Kristen K. Will<sup>g</sup>, Mary Saxon<sup>h</sup>

<sup>a</sup> University of Puget Sound, School of Occupational Therapy, 1500 N. Warner Street #1070, Tacoma, WA, 98416-1070, USA

<sup>b</sup> University of Washington School of Medicine, Department of Family Medicine, Box 354696, Seattle, WA, 98195-4696, USA

<sup>c</sup> Scrivner Family Director of the Research, Quality Improvement and Patient Safety (ResQIPS) Program, HonorHealth Academic Affairs, 20201 N. Scottsdale Healthcare Drive, Suite 100, Scottsdale, AZ, 85255, USA

<sup>d</sup> Arizona State University, College of Health Solutions, 550 N. 3rd Street, Phoenix, AZ, 85004, USA

<sup>e</sup> Faculty Honors Advisor- Science of Health Care Delivery, Barrett, the Honors College, USA

<sup>f</sup> Adjunct Faculty, Mayo Clinic School of Medicine, AZ, USA

<sup>g</sup> Executive and Continuing Education, Science of Health Care Delivery, Arizona State University, College of Health Solutions, 550 N. 3rd Street, Phoenix, AZ, 85004, USA

<sup>h</sup> Science of Healthcare Delivery, Arizona State University, College of Health Solutions, 550 N. 3rd Street, Phoenix, AZ, 85004, USA

Received 26 August 2019; revised 19 December 2019; accepted 28 January 2020

Available online 5 February 2020

## Abstract

**Purpose:** People of color often face challenges in accessing equitable healthcare. Disparities in healthcare pose very real moral and ethical social justice dilemmas for society, and prevent efforts to improve the nation's health and manage escalating healthcare costs. A diverse healthcare workforce is necessary as a means to help care for an increasingly diverse patient population.

**Method:** This paper focuses on programmatic and research information that is a collaborative effort between a number of researchers and educators in schools of medicine and allied healthcare. The paper looks at the current state of racial and ethnic diversity in the health professions and describes the social justice implications of a representative healthcare workforce. Using a “pipeline to practice” model, the authors will present information spanning the pipeline from encouraging high school students of color to enter the allied healthcare professions to introducing undergraduate and graduate students in health professions program to responsive policy making and cross-cultural communication. The authors reviewed the research literature across multiple institutions and professional health programs, and include illustrative case studies.

**Results:** The authors found that overall, the healthcare workforce is becoming more diverse however, with the majority of people of color in healthcare jobs remaining in entry-level and often lower paying jobs. The need to increase the diversity of the healthcare workforce in all fields of allied health is a continuing need. The most promising practices tended to be comprehensive programs that include a combination of social support, academic support, and financial support.

**Discussion:** This information has great significance for health professions education programs as they strive to diversify their student populations, retain students of color, and provide culturally responsive education and training. This interdisciplinary collaborative perspective illustrates what can be learned from varied health professional programs as well as making new connections across often disconnected practice settings.

\* Corresponding author. University of Puget Sound, School of Occupational Therapy, 1500 N. Warner #1070, Tacoma, WA, 98416-1070, USA.

E-mail addresses: [kwilbur@pugetsound.edu](mailto:kwilbur@pugetsound.edu) (K. Wilbur), [snyderc@uw.edu](mailto:snyderc@uw.edu) (C. Snyder), [AEssary@honorhealth.com](mailto:AEssary@honorhealth.com) (A.C. Essary), [Swapna.Reddy@asu.edu](mailto:Swapna.Reddy@asu.edu) (S. Reddy), [kkwill@asu.edu](mailto:kkwill@asu.edu) (K.K. Will), [msaxon@asu.edu](mailto:msaxon@asu.edu) (Mary Saxon).

Peer review under responsibility of AMEEMR: the Association for Medical Education in the Eastern Mediterranean Region.

<https://doi.org/10.1016/j.hpe.2020.01.002>

2452-3011/© 2020 King Saud bin Abdulaziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

© 2020 King Saud bin Abdulaziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Keywords:** Disparities; Workforce; Healthcare; Social justice

## 1. Introduction

By the year 2043, the demographic makeup of the United States is predicted to drastically shift so that racial and ethnic minorities will become the majority for the first time in the history of the United States.<sup>1</sup> The population of Whites in the U. S. is estimated to fall from 78% (2012) to 69% (2060) while the total population of Hispanics, African Americans, Asian Americans, and Native Americans combined will grow from 22% (2012) to 31% (2060).<sup>1</sup> With this demographic shift a focus on improving health and reducing health disparities has become a concern for many institutions of public health.

Health disparities by race and ethnicity, income and education, disability status, and other social characteristics still exist and have serious health consequences for people of color.<sup>2</sup> Research has shown that racial and ethnic minorities receive a lower quality of healthcare across a range of illnesses and healthcare services even when access-related factors are taken into consideration.<sup>3</sup> In its most recent report, the Centers for Disease Control stated that racial and ethnic minorities continue to experience significant incidences of preterm births, HIV diagnoses, and prevalence of diagnosed diabetes, coronary heart disease, stroke and hypertension.<sup>2</sup> Additionally, while there is no direct evidence that healthcare provider bias affects the quality of care for patients of color, research suggests diagnostic and treatment decisions, as well as feelings about patients, are influenced by a patients' race.<sup>3</sup> Furthermore, in a 2018 systematic review of the literature researchers found evidence regarding the effects of race and racial concordance on patient-physician communication finding that the majority of the literature supports the finding that Black patients report poorer patient-physician communication than White patients.<sup>4</sup> The Institute of Medicine found that the responses of patients of color to healthcare providers could also be a potential source of disparities; however, it is reasonable to anticipate that if patients convey mistrust, refuse treatment, or comply poorly with treatment, healthcare providers may become less engaged in the treatment process.<sup>3</sup> It is also likely that these kinds of reactions from patients of color could be

understandable in response to negative racial experiences in other contexts, or to real or perceived mistreatment by healthcare providers.<sup>3,5</sup> Racial and ethnic disparities in healthcare result in worse outcomes and are therefore unacceptable.<sup>3</sup>

Greater diversity in the healthcare workforce is seen as a promising strategy for addressing racial and ethnic healthcare disparities by improving access to healthcare for underserved patients,<sup>6–9</sup> improving the patient experience, and increasing patient satisfaction.<sup>8,10</sup> However, racial and ethnic diversity in many healthcare professions has not kept pace with demographic changes in the general populations of the United States.<sup>10,11</sup> Chiropractors, speech-language pathologists, veterinarians, audiologists, and podiatrists have some of the lowest proportions of professionals of color.<sup>12</sup> The lack of diversity among the healthcare professions has significant consequences for access to healthcare services, health outcomes and health equity for patients and communities of color.<sup>10,11</sup>

In this paper the authors: 1) provide a review the current state of racial and ethnic diversity in higher education and in the health professions; 2) describe the social justice implications of a representative healthcare workforce; and 3) identify case studies that promote racial and ethnic diversity in the health and healthcare community.

### 1.1. Background

Studies have shown that people of color and low socioeconomic status populations shoulder the burden of illness-related morbidity and mortality in the U.S. leading to prominent disparities in healthcare.<sup>13,14</sup> Even when controlling for insurance status, challenges accessing quality healthcare remain and numerous studies have documented significant differences in healthcare access and quality among people of color.<sup>3,14,15</sup>

Only 23% of African Americans, 26% of Hispanics, and 39% of Asian Americans have a physician that shares their race or ethnicity, compared to 82% of White Americans.<sup>16</sup> Healthcare providers (HCP), physicians, dentists, Physician Assistants (PAs), and Nurse Practitioners (NPs), from diverse backgrounds tend to understand better the culture, background, and historical events affecting people of color. Racial

concordance between the HCP and patient correlates with improved patient health outcomes, patient satisfaction, and communication.<sup>4,18</sup> Patients with HCP of the same race report greater mutual respect compared to patients with an HCP of a different race.<sup>17</sup> These factors play a large role in determining whether a patient will feel comfortable disclosing certain information to their provider and whether they will be given treatment that is culturally sensitive and appropriate given the resources of the patients. Despite the benefits of having representation in healthcare, many patients fail to experience racial concordance in their healthcare experience.<sup>16</sup>

## 2. The health professions and health professions education

### 2.1. Racial and ethnic diversity in the health professions

Demographic trends among the healthcare workforce suggest that overall, the workforce is becoming more diverse and is one of the more diverse occupational fields. In the past 10 years there has been an increase in the proportion of people of color in the total healthcare workforce, which encompasses entry level jobs with lower education requirements (e.g., nursing assistants) to highly skilled jobs requiring extensive education (e.g., physicians).<sup>12</sup> Further, the overall health workforce is slightly more diverse than the overall U.S. population.<sup>12</sup> However, close evaluation of occupational data reveal that the majority of people of color in healthcare jobs remain in entry-level and often lower paying jobs with little opportunity for advancement, such as aides, assistants, and technicians.<sup>12,19</sup> Snyder et al. found that professions with the highest proportion of people of color included: Nursing, Psychiatric, and Home Health Aides, Personal and Home Care Aides, and Licensed Practical Nurses and Licensed Vocational Nurses, while the professions with the highest proportion of White professionals included: Podiatrists, Audiologists, Veterinarians, Chiropractors, and Speech-language Pathologists.<sup>12</sup> Similarly, a report by the U.S. Department of Health and Human Services found that there was considerable variation in racial and ethnic diversity by health occupations and that all professionals of color, except Asians are underrepresented in occupations involved in diagnosing and treating (i.e., dentists, dieticians, pharmacists, occupational therapists, physical therapists, physician assistants, speech-language pathologists and registered nurses).<sup>19</sup>

### 2.2. Racial and ethnic diversity in health professions education

Workforce disparities have significant downstream effects in health professions education. One result of the lack of diverse representation can be seen by examining the educational pipeline. Although the overall number of students of color attending post-secondary educational programs has increased over the past several years,<sup>20</sup> students of color remain underrepresented in many healthcare profession schools.<sup>12</sup>

The Association of American Medical Colleges reported that in 2015 White students comprised 47.8% of medical school applicants and 51.2% of enrolled students and remained the majority of graduates.<sup>21</sup> That same year, 6% of medical school graduates were Black or African American, and 5% were Hispanic or Latino.<sup>21</sup> Medical school acceptance rates differ among select racial and ethnic groups. White, Hispanic or Latino and Asian applicants had comparatively similar acceptance rates of approximately 42–44%, while Black applicants reported a lower acceptance rate of 34%.<sup>21</sup>

In 2017, 3% of Physician Assistant (PA) program graduates were Black or African American, compared to 5% in 2010.<sup>22,23</sup> Similarly, 3.3% percent of the 2017–2018 first-year PA program students were Black or African American, compared to 3.4% in 2010, and 7.4% were Hispanic, Latino, or Spanish, compared to 13% in 2010, despite an increase in overall program number (159 vs. 223) and class capacity.<sup>22,24</sup>

The statistics for professional therapy programs are similar. The Commission on Accreditation in Physical Therapy Education reported enrollments in all PT programs of 3% Black students, 6% Hispanic/Latino students, 8% Asian students, with American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students enrolled under 1%.<sup>25</sup> Likewise, occupational therapy programs show enrollment rates for all OT programs of 19% Black or students, 23% Hispanic students, 19% Asian students, and American Indian/Alaskan Native and Native Hawaiian/Pacific Islander students enrolled at less than 1%.<sup>26</sup> Communication Sciences and Disorders programs (speech pathology, and audiology) report graduate first-year enrollments for racial/ethnic minorities as follows: entry-level clinical doctorate in audiology at 13% and master's in speech-language pathology at 19% (note: the CSD did not specify race/ethnicity subgroups).<sup>27</sup>

In addition to the under-enrollment of students of color in the health professions programs, there is a

deficit of faculty diversity as well. Only 4% of medical school faculty, 7.6% of PA program faculty and between 13 and 19% of public health school faculty identify as racial or ethnic minorities.<sup>28,29</sup> This is critical given that one of the major challenges for students of color entering health professional schools include access to role models and mentors. Without adequate representation of faculty of color in health professional schools and in leadership roles, students of color may not see such careers as an option or may not have supportive mentorship in their educational experiences, leading to attrition.<sup>11,30,31</sup>

Finally, given the underrepresentation of minorities in allied healthcare professions, the use of cultural competency training is seen as a way to prepare all students in health professions programs to serve patients from diverse social and cultural backgrounds.<sup>32</sup> However, within professional health programs there is great variability in curriculum content and teaching approaches.<sup>33</sup>

### 2.3. Laws and policies that affect diversity efforts

Scholars and practitioners argue that increasing the diversity of the healthcare workforce is essential for the provision of culturally responsive care, expanding healthcare access, and enriching the pool of leaders and policymakers to meet the needs of a diverse society.<sup>31,34</sup> An increase in the number of medical students of color occurred in the 1960s with the advent of the civil rights movement.<sup>31</sup> The federal government assisted students of color by establishing financial aid and loan forgiveness programs.<sup>31</sup> The greatest increases in students of color applications to medical schools were seen in the early 1990s with higher education's commitment to federal Title VII programs.<sup>31</sup> However, several Supreme Court cases arguing against affirmative action programs and race-based admissions policies have resulted in a decline of students of color applicants and matriculants among the nation's medical programs.<sup>31</sup>

The Affordable Care Act introduced Titles VII and VIII of the Public Health Services Act that created incentives for healthcare providers to practice in medically underserved areas, improved cultural competence and increased diversity through scholarships and programs targeted for students from diverse backgrounds.<sup>35</sup> More recently, U.S. lawmakers have introduced the Allied Health Workforce Diversity Act (H.R. 3637) that is now making its way through the Senate. If passed, this legislation would allow the Department of Health and Human Services to provide

grants to accredited PT, OT, audiology, and SLP education programs to increase diversity in the professions. Grants could be used to provide scholarships or to support recruitment and retention efforts for students of color.<sup>36</sup>

Finally, current gaps in college spending nationally shortchange students of color. A recent analysis looked at education spending at public two- and four-year colleges and showed that the amount spent per student of color (defined as Black and Latino) was more than \$1,000 less per year than what is spent on their White counterparts.<sup>37</sup> Additionally, disadvantaged students of color are concentrated at lower-resourced institutions and Whites at higher resourced institutions within the same system.<sup>37</sup> Nationally, public colleges spend approximately \$5 billion less educating students of color in one year than they do educating White students.<sup>37</sup>

### 2.4. The social justice implications of a representative healthcare workforce

The World Health Organization (2018) reports that health disparities have significant social and economic costs to both individuals and societies.<sup>38</sup> Maternal mortality is a key indicator of health inequity with developing countries accounting for 99% of annual maternal deaths in the world.<sup>38</sup> Such disparities in health have very real social and moral consequences. As reported earlier, one way to address health disparities is to invest in a more racially and ethnically diverse healthcare workforce. This requires improved efforts to recruit and retain healthcare professionals from underrepresented minority backgrounds.

The disparities in access and support facing students of color illustrate a continued need for efforts to increase the diversity of the healthcare workforce throughout the education continuum. An important component of these efforts includes the recruitment and retention of students of color throughout the educational pipeline. [Figs. 1 and 2](#) demonstrate case studies in best practices in recruitment and retention.

## 3. Discussion

Studies have shown that HCP who identify as racial or ethnic minorities are more likely to provide care to lower-income, minority, and uninsured populations.<sup>7,39</sup> In fact, the probability of a medical resident choosing primary care as their specialty is nearly four times as great for a Black resident as compared to a White resident.<sup>40</sup> Additionally, compared to their White

Within the Phoenix metropolitan area, a unique partnership between community-based healthcare system in urban Phoenix, AZ and an academic institution produced an interprofessional program for healthcare professionals, training them in the various aspects of healthcare delivery science, including health disparities, cross-cultural communication and cultural competence. The audience included nursing, advanced practice providers, healthcare administrators, physicians and other healthcare providers. Content was delivered in hybrid format, and included health disparities, cultural competence, change management, high-performing teams, creating a Just Culture, and population health management. A total of 27 participants enrolled in the program, with demonstrated improvement in participant learning, assessed via 5-point Likert Scale (baseline, 2.67 vs. post-program, 4.88). The need for further training programs that include content including health disparities, cross-cultural communication and cultural competency was identified as an outcome for future programs. With an aging, diverse patient population, healthcare professionals need more education on attenuating health disparities and developing stronger skills in cross-cultural communication and cultural competency.

Fig. 1. Case study - Academic-community partnerships in post-graduate education.

counterparts, students of color tend to place a higher value on the ‘opportunity to serve vulnerable and low-income populations’ and also view low-income patients less negatively.<sup>7</sup> Simply put, a diverse healthcare workforce helps care for an increasingly diverse patient population.

Matriculating diverse student populations into healthcare professional training programs is imperative to improve health disparities and improve cross-cultural communication. Equally important is to educate healthcare professionals on health disparities and cultural humility. Evidence shows that cultural humility education for healthcare professionals during their formative years of training can positively impact patient and provider satisfaction especially in disparate populations.<sup>41</sup> The ability to provide care at the personalized level implies the provider is aware and recognizes the individual's culture and psychosocial status to ultimately provide more holistic care.<sup>42</sup> In fact, cultural humility, health disparities and cross-cultural communication as they pertain to cultural

differences and social justice are built into many of the major healthcare professional accreditation standards in the United States.<sup>32</sup> Efforts to integrate these curricular components have expanded over the last decade and must include post-professional education in cultural humility, cross-cultural communication, and health disparities.<sup>32</sup>

There have been a number of programs and efforts to increase the diversity of healthcare workforce, ranging from high school programs designed to help increase students’ interests in STEM, college support programs to support students of color in STEM or healthcare careers, as well as efforts at the professional school level (e.g., medicine, dentistry, and nursing) to help recruit and retain students. The most promising practices have tended to be comprehensive programs that include a combination of social support, academic support, and financial support.<sup>12,43</sup>

Other promising efforts included targeted recruitment to specific populations, summer enrichment programs for high school or early college students,

Little is known about factors that influence post-secondary decisions for racially and ethnically diverse high school students and in particular their interest in and exposure to the field of occupational therapy. Using a critical ethnographic methodology, seven racially and ethnically diverse individuals from a public high school (six students and one counsellor) were interviewed individually and in two focus groups, and participant observation was utilized. “No interest in healthcare” emerged as the major theme with the following sub-themes: (a) “science is not my thing,” (b) lack of relationships with healthcare professionals, and (c) no information about the profession. The results of this study suggest some important actions to consider in order to diversify the occupational therapy workforce. Study participants indicated that their interest in science and math diminished after middle-school. Students also held a belief that a strong academic performance in science and math is the pathway to a career in healthcare. Similarly, the importance of establishing relationships with students while in middle and high school appears to be a determining factor in student interest in a particular college and career. In addition to addressing student interest in science and math, occupational therapy educators should be encouraged to reach out and offer to speak at local high school career events and connect with local high school college and career counselors. The provision of after-school healthcare career clubs or summer programs to expose students to the allied health professions and occupational therapy would likewise be beneficial. When students can take part in hands on experiences within the healthcare professions it is more likely that they will gain a greater interest in the field of occupational therapy and other allied health professions. This study has implications for diversification of the OT workforce as well as other allied health professional programs.

Fig. 2. Research — Occupational Therapy as a Career Choice by High School Students of Color.

research opportunities, and changing the curriculum to reflect and respond to the needs of communities of color.<sup>12,44–47</sup>

#### 4. Conclusion

Although there are many promising practices emerging, there is still much unknown about the long-term impact of such programs on racial and ethnic diversity in health professions. In order to provide

patients and populations with high-quality and accessible care, it is crucial that we advocate for a representative healthcare workforce, and provide students opportunities to learn from, with, and about each other in order to improve patient outcomes.

In order to begin to address the challenges highlighted in this paper, including financial challenges, disconnected pipelines and unclear pathways, and lack of academic and social supports, the authors suggest the following areas of future research and practice:



1. Identify, develop, and evaluate strategies to reduce financial barriers in the education and training processes in health professions programs for students of color (i.e., redundant/repetitive fees; implement holistic admissions practices).
2. Establish and monitor partnerships between community colleges, 4-year universities, and medical schools to develop pathway programs for students who identify as racial or ethnic minorities.
3. Identify promising infrastructures that support (academically) and develop (professionally) students toward a career in the health professions programs.
4. Develop professional pathways for entry-level health professionals to advance in their careers.
5. Explore the impact of recruiting and hiring diverse faculty in higher education.

## Acknowledgement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## References

1. Bernstein R. U.S. Census Bureau Projections Show a Slower Growing, Older, More Diverse Nation a Half Century From Now. United States Census Bureau, Public Information Office. CB12-243. Released Wednesday, Dec 12, 2012. Available at: <https://www.census.gov/newsroom/releases/archives/population/cb12-243.html>.
2. CDC Health Disparities & Inequalities Report (CHDIR) - Minority Health - CDC. Centers for Disease Control and Prevention. <https://www.cdc.gov/minorityhealth/chdireport.html>. Published November 26, 2013.
3. Smedley BD, Stith AY, Nelson AR, eds. Unequal Treatment: Confronting Racial and Ethnic Disparities in Healthcare. Institute of Medicine of the National Academies. Washington, D.C.: The National Academies Press.
4. Shen MJ, Peterson EB, Costas-Muñiz R, et al. The effects of race and racial concordance on patient-physician communication: a systematic review of the literature. *J Racial Ethn Health Disparities*. 2018 February;5(1):117–140. <https://doi.org/10.1007/s40615-017-0350-4>.
5. Washington HA. *Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present*. New York, NY: Anchor Books; 2006.
6. Jackson CS, Gracia J. Addressing health and health-care disparities: the role of a diverse workforce and the social determinants of health. *Publ Health Rep*. 2014;129:57–61.
7. Mitchell DA, Lassiter SL. Addressing healthcare disparities and increasing workforce diversity: the next step for the dental, medical, and public health professions. (COMMENTARIES)(author abstract). *Am J Publ Health*. 2006;96(12):2093.
8. Saha S, Shipman SA. Race-neutral versus race-conscious workforce policy to improve access to care. *Health Aff (Millwood)*. 2008;27(1):234.
9. Villarruel TA, Washington AD, Lecher AW, Carver AN. A more diverse nursing workforce. *Am J Nurs*. 2015;115(5):57–62.
10. Hinton I, Howell J, Merwin E, et al. The educational pipeline for healthcare professionals: understanding the source of racial differences. *J Hum Resour*. 2010;45(1):116–156.
11. Donini-Lenhoff FG, Brotherton SE. Racial-ethnic diversity in allied health: the continuing challenge. *J Allied Health*. 2010;39(2):104–109.
12. Snyder CR, Frogner BK, Skillman SM. Facilitating racial and ethnic diversity in the health workforce. *J Allied Health*. 2018;47(1):58–65.
13. Kaiser Family Foundation. *Racial and Ethnic Disparities in Access to and Utilization of Care Among Insured Adults*; 2015. <http://kff.org/disparities-policy/issue-brief/racial-and-ethnic-disparities-in-access-to-and-utilization-of-care-among-insured-adults/>.
14. Richardson A, Allen JA, Xiao H, Vallone D. Effects of race/ethnicity and socioeconomic status on health information-seeking, confidence, and trust. *J Health Care Poor Underserved*. 2012;23(4):1477–1493.
15. Kaiser Family Foundation. *The Impact of the Coverage Gap in States Not Expanding Medicaid by Race and Ethnicity*; 2015. <http://kff.org/disparities-policy/issue-brief/the-impact-of-the-coverage-gap-in-states-not-expanding-medicaid-by-race-and-ethnicity/>.
16. Collins KS. Diverse communities, common concerns: assessing healthcare quality for minority Americans: findings from the commonwealth fund 2001 healthcare quality survey. (healthcare industry).(brief article)(statistical data included). *Med Benefit*. 2002;19(7):5.
17. Cooper-Patrick L, Gallo JJ, Gonzales JJ, et al. Race, gender, and partnership in the patient-physician relationship. *J Am Med Assoc*. 1999;282(6):583–589.
18. Snyder CR, Dahal A, Frogner BK. Occupational mobility among individuals in entry-level healthcare jobs in the United States. *J Adv Nurs*. 2018;74:1628–1638. <https://doi.org/10.1111/jan.13577>.
19. U.S. Department of Health and Human Services, Health Resources and Services Administration, National Center for Health Workforce Analysis. *Sex, Race, and Ethnic Diversity of U.S. Health Occupations (2011–2015)*, Rockville, Maryland. 2017.
20. National Center for Educational Statistics. *Fall Enrollment of U.S. Residents in Degree-granting Postsecondary Institutions, by Race/Ethnicity: Selected Years, 1976 Through 2024*; 2013. Retrieved from: [http://nces.ed.gov/programs/digest/d14/tables/dt14\\_306.30.asp?current=yes](http://nces.ed.gov/programs/digest/d14/tables/dt14_306.30.asp?current=yes).
21. *Diversity in Medical Education: Facts and Figures*. AAMC; 2016. Available at: <http://www.aamcdiversityfactsandfigures2016.org/>.
22. Physician Assistant Education Association. *By the Numbers: Program Report 33: Data from the 2017 Program Survey*. Washington, DC: PAEA; 2018. <https://doi.org/10.17538/PR33.2018>.
23. Lane S, Scott C. *Twenty-Sixth Annual Report on Physician Assistant Educational Programs in the United States, 2009–2010*. Physician Assistant Education Association; January 2012.
24. Physician Assistant Education Association. *By the Numbers: Program Report 32: Data from the 2016 Program Survey*.

- Washington, DC: PAEA; 2017. <https://doi.org/10.17538/PR32.2017>.
25. Commission on Accreditation in Physical Therapy Education. 2017-2018 Fact Sheet Physical Therapy Education Programs. Retrieved from: <http://www.capteonline.org/AggregateProgramData/?navID=47244641600>.
  26. American Occupational Therapy Association. *Academic Programs Annual Data Report*; 2018. Academic year 2017-2018. Retrieved from: <http://www.aota.org/media/Coporate/Files/EducationCareers/Educators/2017-2018-annual-data-report.pdf>.
  27. 2018 Communication Sciences and Disorders (CSD) Education Survey. 2017-2018 Academic Year. Retrieved from: <https://www.asha.org/Academic/HES/CSD-Education-Survey-Data-Reports/>.
  28. Physician Assistant Education Association, reportBy the Numbers: Faculty Report 3: Data from the 2017 Faculty & Directors.
  29. Rubin R. Despite policies to improve faculty diversity, disparities persist at public health schools. *J Am Med Assoc*. 2019;321(23):2268–2270. <https://doi.org/10.1001/jama.2019.3891>. Published online May 29.
  30. *Missing Persons: Minorities in the Health Professions, A Report of the Sullivan Commission on Diversity in the Healthcare Workforce*. Sullivan Commission; 2004.
  31. Cohen JJ, Gabriel BA, Terrell C. The case for diversity in the healthcare workforce. *Health Aff*. 2002;21(5):90–102.
  32. Betancourt JR, Green AR, Carrillo JE, Park ER. Cultural competence and healthcare disparities: key perspectives and trends. *Health Aff*. 2005;24(2):499–505.
  33. Green AR, Chun MJB, Cervantes MC, et al. Measuring medical students' preparedness and skills to provide cross-cultural care. *Health Equity*. 2017;1(1):15–22. <https://doi.org/10.1089/heq.2016.0011>.
  34. Valentine P, Wynn J, Mclean D. Improving diversity in the health professions. *N C Med J*. 2016;77(2):137.
  35. Bowser R. *The Affordable Care Act and Beyond: Opportunities for Advancing Health Equity and Social Justice*; 2013. [http://health-equity.lib.umd.edu/4186/1/The\\_Affordable\\_Care\\_Act\\_and\\_Beyond.pdf](http://health-equity.lib.umd.edu/4186/1/The_Affordable_Care_Act_and_Beyond.pdf). Accessed July 17, 2019.
  36. Allied Health Workforce. *Diversity Act of 2019*. 2019. H.R. 3637, 116d Cong.
  37. Garcia S. *Gaps in College Spending Shortchange Students of Color*. Center for American Progress; April 5, 2018. Retrieved March 24, 2018 from: <https://www.americanprogress.org/issues/education-postsecondary/reports/2018/04/05/448761/gaps-college-spending-shortchange-students-color/>.
  38. World Health Organization. *Health Inequities and their Causes*; 2018. <https://www.who.int/news-room/facts-in-pictures/detail/health-inequities-and-their-causes>.
  39. Coplan B, Smith N, Cawley JF. *J Am Acad Physician Assistants*. September 2017;30(9):35. <https://doi.org/10.1097/01.JAA.0000522136.76069.15>.
  40. Mensah MO, Sommers BD. The policy argument for healthcare workforce diversity. *J Gen Intern Med*. 2016;31(11):1369.
  41. Taylor SL, Lurie N. The role of culturally competent communication in reducing ethnic and racial healthcare disparities. *Am J Manag Care*. 2004;10:SP1–SP4.
  42. Shaya FT, Gbarayor CM. The case for cultural competence in health professions education. *Am J Pharmaceut Educ*. 2006;70(6):124.
  43. Wiggs JS, Elam CL. Recruitment and retention: the development of an action plan for African-American health professions students. *J Natl Med Assoc*. 2000;92(3):125–130.
  44. Health Resources and Services Administration, Office of Public Health and Science. Pipeline Programs to Improve Racial and Ethnic Diversity in the Health Professions: An Inventory of Federal Programs, Assessment of Evaluation Approaches, and Critical Review of the Research Literature. Rockville, MD: U.S. DHHS: Available at: <http://bhpr.hrsa>.
  45. Robert Wood Johnson Foundation. *Pipeline, Profession & Practice: Community-Based Dental Education*. RWJF; 2013. [http://www.rwjf.org/content/dam/farm/reports/program\\_results\\_reports/2013/rwjf69623](http://www.rwjf.org/content/dam/farm/reports/program_results_reports/2013/rwjf69623).
  46. Hurtado S, Cabrera NL, Lin MH, et al. Diversifying science: underrepresented student experiences in structured research programs. *Res High Educ*. 2009;50(2):189–214.
  47. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. *Expanding Underrepresented Minority Participation*. Washington, DC: National Academies Press; 2011. Available at: <https://grants.nih.gov/>.