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Racial/Ethnic Diversity in Academic Public Health: 20-Year Update

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Abstract

Objective: This study is a follow-up to an examination of the racial/ethnic composition of public health students (1996) and faculty (1997) at schools of public health that was conducted 20 years ago. We examined data on the race/ethnicity of students, graduates, and faculty among Association of Schools and Programs of Public Health (ASPPH)–member institutions during 2016-2017 and how these data have changed in the past 20 years.

Methods: We obtained data on the race/ethnicity of students (in 1996 and 2016), graduates (in 1996 and 2016), and faculty (in 1997 and 2017) at ASPPH-member institutions from the ASPPH Data Center. We tabulated frequencies, percentages, and 20-year percentage-point changes by race/ethnicity. We examined data for all current ASPPH-member institutions and for comparable subcohorts of 1996 and 1997 member institutions that are current ASPPH members.

Results: In graduate student enrollment, the 20-year increase in each nonwhite racial/ethnic subgroup was $\leq$5 percentage points. Among tenured faculty, the 20-year increase was greatest among Asians (8 percentage points) but was <3 percentage points for black, Hispanic, and Native American faculty.

Conclusions: The increasing racial/ethnic diversity among students, graduates, and faculty in schools and programs of public health contributes to parallel increases in racial/ethnic diversity in the public health workforce. Schools and programs of public health should recruit clusters of racial/ethnic minority students using holistic application review processes, provide enrolled students with racially/ethnically diverse role models and mentors, and dedicate staffing to ensure a student-centered approach. In addition, those who mentor racially/ethnically diverse students and junior faculty should be rewarded.

Keywords

academic public health, faculty diversity, racial/ethnic composition, racial/ethnic diversity, student diversity

Today's public health challenges are complex, with many biological, environmental, and social contributors.[1-4] One of the most intractable public health issues is the racial/ethnic disparity in health outcomes.[5,6] To address racial/ethnic disparities in health outcomes, it is important to have a racially and ethnically diverse workforce that is capable of addressing such public health issues.[5,7-9] Given its social justice focus, the public heath discipline can be an attractive career path, particularly for those often underrepresented in the sciences and health professions (eg, persons from racial/ethnic minority groups, first-generation students).[10] For example, the percentage of women faculty in public health increased from 34% in 1990 to 49% in 2017.[11]

In 1999, "The Shape of Our River" examined racial/ethnic diversity among public health students and faculty at 28 schools of public health.[12] The analysis highlighted the need to train more racial/ethnic minority students in public health, particularly at the doctoral level. The analysis also supported a call to continue to increase underrepresented racial/ethnic minority faculty based on the disproportionate underrepresentation of black, Hispanic, and Native American persons, with the overall goal to highlight the importance of achieving racial/ethnic diversity in the public health workforce[12] (using data from W. Katz, *Fall 1997 US Schools of Public Health*

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Data Report on Faculty, unpublished report, 1998; W. Katz, *1996 Annual Data Report: Applications, New Enrollment, and Students, Fall 1996 Graduates and Expenditures, 1995-96 With Trends Analysis 1985-86 Through Fall 1996*, unpublished report, 1998; and M. Levin, *US Schools of Public Health Data Report on Faculty 1991-1992,* unpublished report, 1993). The 1999 report noted the absence of a racially/ethnically diverse pool of candidates as a contributing factor to the lack of racial/ethnic diversity in doctoral programs and among faculty in schools of public health.[12] Given an 11-percentage-point increase in racial/ethnic minority students enrolled in schools of public health from 1986 to 1996, the pool of candidates appeared to be increasing in racial/ethnic diversity.[12] In addition, a separate study noted that the proliferation of academic public health degree programs led to an increase in the number of graduate degrees conferred annually from 1992 to 2016, as additional colleges and universities began to offer public health as a major.[13]

During a 20-year period, the number of undergraduate public health degrees conferred increased from 759 in 1992 to 6464 in 2012. Undergraduate students in public health are more racially/ethnically diverse than undergraduates overall.[14] From 2003 to 2012, the percentage of undergraduate degrees conferred to persons in racial/ethnic minority groups increased from 5% to 12% among Asian/Pacific Islanders and from 6% to 9% among Hispanic persons but decreased from 23% to 18% among black persons.[14] We examined the racial/ethnic diversity of undergraduate and graduate students and faculty in public health to provide an update on the data presented in "The Shape of Our River."[12]

Methods

For the analysis, we obtained data on undergraduate and graduate students (W. Katz, *1996 Annual Data Report: Applications, New Enrollment, and Students, Fall 1996 Graduates and Expenditures, 1995-96 With Trends Analysis 1985-86 Through Fall 1996*, unpublished report, 1998) and on faculty members (W. Katz, *Fall 1997 US Schools of Public Health Data Report on Faculty*, unpublished report, 1998) from the Association of Schools and Programs of Public Health (ASPPH) Data Center.[11] We used racial/ethnic categories and terminology (ie, Asian, black, Hispanic, Native American, white) from 1996 because of changes in the racial/ethnic classification used for data collection over time. For example, in 2010, the "black" racial category was changed to "black or African American," and "Hispanic" ethnicity was changed to "Hispanic/Latino." We tabulated counts and percentages of undergraduate and graduate student enrollment in 1996 and 2016 by degree (bachelor's, master's, doctoral) and race/ethnicity. For our analysis, we excluded foreign-national students and students whose race was listed as unknown, multiracial, or Native Hawaiian/Pacific Islander to allow for consistent comparisons over time. We excluded foreign-national students because of the inability to classify these students into racial/ethnic categories used in the United States. Foreign nationals comprised 13% (in 1996) and 15% (in 2016) of the graduate-level public health student population among institutions that were members of ASPPH.[11] We tabulated counts and percentages of faculty during 1997 and 2017 by academic title (assistant professor, associate professor, professor) and race/ethnicity for all institutions and by race/ethnicity among tenured faculty for institutions that provided tenure.

The number of ASPPH members increased from 27 in 1996 to 105 in 2016. We tabulated final data from ASPPH members included in "The Shape of Our River" (n = 27 in 1996, n = 28 in 1997) and data on all ASPPH members that reported in 2016 (n = 89) and 2017 (n = 85). Given the changes in ASPPH membership over time and to provide comparable data, we also present results on the cohort of institutions (hereinafter, cohort) that provided data for "The Shape of Our River" and in 2016-2017 (n = 26 in 1996, n = 27 in 1997). Using the comparable cohorts, we calculated the 20-year percentage-point change for graduate students (from 1996-2016), degrees conferred (from 1996-2016), and faculty (from 1997-2017). Data on undergraduate student enrollment and degree conferrals were not available in 1996. Data were extracted from the ASPPH Data Center Tableau database into Microsoft Excel for tabulation and calculations. The University Committee on Activities Involving Human Subjects, the institutional review board of New York University, designated this study as exempt.

Results

Public Health Student Enrollment

In 1996, among all ASPPH-member institutions (n = 27), racial/ethnic minority groups comprised 29.4% of students enrolled in graduate degree programs, consisting of 11.3% Asian, 8.3% black, 9.0% Hispanic, and 0.8% Native American. This racial/ethnic composition is similar to that of the cohort (excluding Hawaii), except for a decrease in the percentage of Asians to 10.7%. From 1996 to 2016, enrollment of racial/ethnic minority students pursuing master's and doctoral degrees at schools of public health increased 10.9 percentage points (Table 1). The increase in graduate student enrollment from 1996 to 2016 was greatest among Asian students (5.0 percentage points; from 10.7% to 15.7%). Native American graduate students comprised <1% of graduate student enrollment in both years and were the only racial/ethnic group for whom the percentage enrolled decreased during the 20-year period (by 0.3 percentage points, from 0.7% in 1996 to 0.4% in 2016). In 2016, the percentage of graduate students who were black and undergraduate students who were Hispanic was slightly higher among all ASPPH members than among the cohort (black: 14.8% vs 11.1%; Hispanic: 13.0% vs 10.1%). Racial/ethnic minority enrollment at the undergraduate level was 35.3% in 2016 among institutions that were ASPPH members in 1996;

racial/ethnic minority enrollment was slightly higher (38.3%) among all ASPPH members in 2016 than in 2006.

Table 1. Graduate student enrollment, by race/ethnicity, in schools of public health that were ASPPH members in 1996 and 2016, United States[a]

Race/Ethnicity[b]	Graduate Enrollment Among 1996 ASPPH-Member Institutions[c]	Graduate Enrollment Among 2016 ASPPH-Member Institutions[d,e]	Percentage-Point Change
Total	11 832	13 774	—[f]
Asian[g]	1269 (10.7)	2168 (15.7)	5.0
Black	993 (8.4)	1532 (11.1)	2.7
Hispanic	1084 (9.2)	1741 (12.6)	3.5
Native American	87 (0.7)	61 (0.4)	–0.3
White	8399 (71.0)	8272 (60.1)	–10.9

Abbreviation: ASPPH, Association of Schools and Programs of Public Health.
[a]Unpublished data from the ASPPH Data Center, 1996 and 2016. All values are number (percentage) unless otherwise indicated. Data convey the number of master's and doctoral students enrolled in the 26 ASPPH-member institutions that reported data for 1996 and 2016.
[b]Persons of unknown race, those who indicated ≥2 races, and foreign nationals were excluded from analysis. Only the Hispanic category includes Hispanic students.
[c]Excluding Hawaii. The data are for ASPPH institutions that provided data for 1996 (n = 26).
[d]Excluding Hawaii. The data are for ASPPH institutions that provided data for 1996 and 2016 (n = 26). However, only 2016 data are presented.
[e]Because of rounding, percentages may not total to 100.
[f]The percentage-point change was not calculated for the total.
[g]The Native Hawaiian/Pacific Islander category may have been included with the Asian category in 1996. The count for 2016 was small and was not included.

Degrees Conferred in Public Health

In 1996, among all 27 ASPPH-member institutions, racial/ethnic minority groups received 24.9% of master's degrees granted and 14.4% of doctoral degrees granted. Asian students comprised 10% of master's degree recipients and 7.9% of doctoral degree recipients, black students comprised 8.5% of master's degree recipients and 2.5% of doctoral degree recipients, Hispanic persons comprised 5.6% of master's degree recipients and 4.0% of doctoral degree recipients, and Native Americans comprised <1% of master's degree recipients and no doctoral degree recipients. The percentage of black students who received master's (13.2% vs 10.3%) and doctoral (8.9% vs 6.5%) degrees and the percentage of Hispanic students who received bachelor's degrees (12.5% vs 10.3%) was higher among all ASPPH members than among the cohort in 2016. In 2016, 39.5% of bachelor's degrees in public health granted by institutions in the cohort were conferred to racial/ethnic minority students; this percentage was slightly higher (40.7%) among all ASPPH members. The percentage of public health master's degrees conferred to racial/ethnic minority students increased by 15.1 percentage points overall from 1996 to 2016 (Table 2). The increase was largest among Asian graduates (8.0 percentage points), with smaller increases seen among Hispanic (5.9 percentage points) and black (1.6 percentage points) graduates. The only percentage-point decrease was among Native Americans (0.3 percentage points). The percentage of racial/ethnic minority doctoral graduates increased by 13.8 percentage points from 1996 to 2016. The largest increase was among Asian doctoral graduates (5.6 percentage points), with smaller increases among Hispanic (4.0 percentage points), black (3.9 percentage points), and

Table 2. Number of graduate degrees conferred by schools of public health that were members of ASPPH in 1996 and 2016, by degree and by student race/ethnicity, United States[a]

	1996 Graduates of ASPPH-Member Institutions[c,d]		2016 Graduates of ASPPH-Member Institutions[e]		Percentage-Point Change	
Race/Ethnicity[b]	M	D	M	D	M	D
Total	3594	347	5533	664	—[f]	—[f]
Asian[g]	337 (9.4)	27 (7.8)	960 (17.4)	89 (13.4)	8.0	5.6
Black	314 (8.7)	9 (2.6)	572 (10.3)	43 (6.5)	1.6	3.9
Hispanic	203 (5.6)	14 (4.0)	638 (11.5)	53 (8.0)	5.9	4.0
Native American	26 (0.7)	0	22 (0.4)	2 (0.3)	–0.3	0.3
White	2714 (75.5)	297 (85.6)	3341 (60.4)	477 (71.8)	–15.1	–13.8

Abbreviations: ASPPH, Association of Schools and Programs of Public Health; D, doctoral degree; M, master's degree.
[a]Unpublished data from the ASPPH Data Center, 1996 and 2016. All values are number (percentage) unless otherwise indicated.
[b]Persons of unknown race, those who indicated ≥2 races, and foreign nationals were excluded from analysis. Only the Hispanic category includes Hispanic students.
[c]Excluding Hawaii. The data are for ASPPH institutions that provided data for 1996 (n = 26).
[d]Percentages may not total to 100 due to rounding.
[e]Excluding Hawaii. The data are for ASPPH institutions that provided data for both 1996 and 2016 (n = 26). However, only 2016 data are presented.
[f]The percentage-point change was not calculated for the total.
[g]The Native Hawaiian/Pacific Islander category may have been included with the Asian category in 1996. The count for 2016 was small and was not included.

Table 3. Faculty at schools of public health, by title and race/ethnicity, United States, 1997 and 2017[a]

Race/Ethnicity[b] and Title	1997 Faculty at ASPPH-Member Institutions[c]	2017 Faculty at ASPPH-Member Institutions[d]	Percentage-Point Change[e]
All racial/ethnic groups			
Total	2335	4561	—[f]
Professor	908	2003	—[f]
Associate professor	729	1217	—[f]
Assistant professor	698	1341	—[f]
Asian[g]			
Total[h]	188 (8.1)	621 (13.6)	5.6
Professor[i]	57 (6.3)	219 (10.9)	4.7
Associate professor	52 (7.1)	196 (16.1)	9.0
Assistant professor	79 (11.3)	206 (15.4)	4.0
Black			
Total[h]	84 (3.6)	259 (5.7)	
Professor	11 (1.2)	56 (2.8)	1.6
Associate professor	25 (3.4)	68 (5.6)	2.2
Assistant professor	48 (6.9)	135 (10.1)	3.2
Hispanic			
Total[h]	93 (4.0)	271 (5.9)	2.0
Professor	34 (3.7)	102 (5.1)	1.3
Associate professor	30 (4.1)	76 (6.2)	2.1
Assistant professor	29 (4.2)	93 (6.9)	2.8
Native American			
Total[h]	2 (0.1)	12 (0.3)	0.2
Professor	1 (0.1)	2 (0.1)	0.0
Associate professor	0	3 (0.2)	0.2
Assistant professor	1 (0.1)	7 (0.5)	0.4
White			
Total[h]	1968 (84.3)	3398 (74.5)	−9.8
Professor	805 (88.7)	1624 (81.1)	−7.6
Associate professor	622 (85.3)	874 (71.8)	−13.5
Assistant professor	541 (77.5)	900 (67.1)	−10.4

Abbreviation: ASPPH, Association of Schools and Programs of Public Health.

[a]Unpublished data from the ASPPH Data Center, 1997 and 2017. All values are number (percentage) unless otherwise indicated.

[b]Persons of unknown race, those who indicated ≥2 races, and foreign nationals were excluded from analysis. Only the Hispanic category includes Hispanic faculty.

[c]Excluding Hawaii. Data are for the ASPPH members who reported on racial/ethnic diversity for 1997 (n = 27).

[d]Excluding Hawaii. Data are for the ASPPH members who reported on racial/ethnic diversity for both 1997 and 2017 (n = 27). However, the column includes only data from 2017.

[e]Excluding Hawaii for 1997 data. Data are for the ASPPH members who reported on racial/ethnic diversity for both 1997 and 2017 (n = 27).

[f]The percentage-point change was not calculated.

[g]The Native Hawaiian/Pacific Islander category may have been included with the Asian category in 1997. The count was small in 2017 and was not included.

[h]The denominator is the total number of all racial/ethnic groups in the year designated in the column.

[i]For professor, associate professor, and assistant professor, the denominator for the percentage is the number noted in the corresponding rank in all racial/ethnic groups.

Native American (0.3 percentage points) doctoral graduates.

Public Health Faculty

In 1997, among all 28 ASPPH-member institutions, Asians comprised 8.4% of the faculty: 11.8% of assistant professors, 7.5% of associate professors, and 6.4% of professors. Black persons comprised 3.6% of the faculty: 6.8% of assistant professors, 3.4% of associate professors, and 1.2% of professors. Hispanic persons comprised 3.6% of the faculty: 4.1% of assistant professors, 4.1% of associate professors, and 3.7% of professors. Fewer than 1% of the faculty were Native American.[12] For 3 racial/ethnic minority groups, the percentage of faculty decreased as the academic title increased (Table 3). In 2017, among 27 schools and programs of public health in the cohort, black persons comprised 10.1% of faculty at the assistant professor level, 5.6% at the associate professor level, and 2.8% at the professor level. Hispanic persons comprised 6.9% of faculty at the assistant professor level, 6.2% at the associate professor level, and 5.1% at the professor level. Native Americans comprised <1% of faculty at all levels. Asian persons, who comprised the largest racial/ethnic minority group (>10%) at all faculty levels, were the only racial/

Table 4. Tenured faculty of schools of public health, by race/ethnicity, United States, 1997 and 2017[a]

Race/Ethnicity[b]	1997 Tenured Faculty[c]	2017 Tenured Faculty[d,e]	Percentage-Point Change
Total	1112	1647	
Asian[f]	70 (6.3)	237 (14.4)	8.1
Black	25 (2.2)	62 (3.8)	1.6
Hispanic	50 (4.5)	122 (7.4)	2.9
Native American	1 (0.1)	3 (0.2)	0.1
White	966 (86.9)	1223 (74.3)	−12.6

Abbreviation: ASPPH, Association of Schools and Programs of Public Health.
[a]Unpublished data from the ASPPH Data Center, 1997 and 2017. All values are number (percentage) unless otherwise indicated.
[b]Persons of unknown race or who indicated ≥2 races were excluded from analysis. Only the Hispanic category includes Hispanic faculty.
[c]Excluding Hawaii. Data are for the ASPPH members who reported on racial/ethnic diversity for 1997 (n = 27).
[d]Excluding Hawaii. Data are for the ASPPH members who reported on racial/ethnic diversity for both 1997 and 2017 (n = 27). However, the column includes only data from 2017.
[e]Percentages may not total to 100 due to rounding.
[f]Native Hawaiian/Pacific Islander category may have been included with the Asian category in 1997. The count for 2017 was small and was not included.

ethnic minority group to show a varied pattern between race/ethnicity and academic title: 15.4% were assistant professors, 16.1% were associate professors, and 10.9% were professors. The percentage of Hispanic faculty members was higher among all ASPPH members (8.5%) than among the cohort (5.9%). This difference persisted at the associate professor (9.0% vs 6.2%) and professor (9.4% vs 5.1%) levels but not at the assistant professor level (6.7% vs 6.9%).

In 1997, among all 28 ASPPH-member institutions, 13.3% of tenured faculty members were from racial/ethnic minority groups: 6.6% were Asian, 4.4% were Hispanic, 2.2% were black, and 0.1% were Native American.[12] From 1997 to 2017, the percentage of racial/ethnic minority faculty with tenure increased by 12.6 percentage points (Table 4). The greatest increases were among Asian faculty (8.1 percentage points), followed by Hispanic (2.9 percentage points), black (1.5 percentage points), and Native American (0.1 percentage points) faculty. In 2017, approximately 30% of tenured faculty at ASPPH-member institutions were from a racial/ethnic minority group: 13.3% were Asian, 13.2% were Hispanic, 3.6% were black, and 0.2% were Native American. In 2017, the racial/ethnic composition of tenured faculty among all ASPPH-member institutions that granted tenure was similar to that of the cohort (Table 5), except for a higher percentage of Hispanic persons among all ASPPH-member institutions than in the cohort (13.2% vs 7.4%).

Discussion

Public health can be an attractive discipline for underrepresented racial/ethnic minority students.[13-16] Thus, the potential exists for increased racial/ethnic diversity in the academic public health pipeline—from undergraduate study to faculty status—especially if students are exposed to the field early. Early exposure is supported by the proliferation of undergraduate degrees in public health.[15] The transition of public health from a graduate degree–only discipline to also including the undergraduate degree has strong implications for racially/ethnically diverse students pursuing graduate studies in the future, because undergraduate programs tend to have more racial/ethnic diversity than graduate programs.[13,14,17] This increased racial/ethnic diversity among undergraduate students has the potential to increase racial/ethnic diversity among graduate students and, ultimately, among faculty and other leaders in public health.

In 1997, black, Hispanic, and Native American faculty were disproportionately underrepresented in schools of public health; however, there was potential for increasing the percentage of underrepresented racial/ethnic minority faculty based on an increasing pool of racial/ethnic minority doctoral candidates.[12] Since then, the percentage of underrepresented racial/ethnic minority doctoral graduates has increased by approximately 8 percentage points. Although not all doctoral graduates will pursue academic careers, and many racial/ethnic minority graduates will become members of the public health workforce outside of academia, the racial/ethnic composition of the faculty will likely begin to trend toward rates similar to the rate of doctoral graduates. The percentages of junior faculty who are from underrepresented racial/ethnic minority groups are beginning to mirror the percentages of racial/ethnic minority graduate students, but these increases have yet to reach the higher faculty ranks or tenured faculty. The trends in this 20-year follow-up analysis suggest a need to track racial/ethnic diversity in academic public health to measure improvement, especially given increased efforts by academic institutions to increase racial/ethnic diversity among public health professionals.[15,18]

Some efforts to increase racial/ethnic diversity in public health that are discussed in the literature have generated recommendations on how to recruit and retain racial/ethnic minority trainees. These recommendations include the following: develop undergraduate public health training programs at racial/ethnic minority-serving institutions (eg, historically black colleges and universities, tribal colleges and universities, Asian American and Pacific Islander and Hispanic-serving institutions) to build communities of racial/ethnic minority students rather than recruiting individuals, reward mentoring, provide racially/ethnically diverse role models and mentors (diverse faculty), dedicate staffing to ensure a student-centered approach, and use holistic reviews of applications that rely on various factors (eg, personal statement, letters of recommendation, previous experience), not just grade-point average and standardized test scores.[15,18]

Table 5. Number of students, number of degrees conferred, and number of faculty at schools and programs of public health, by race/ethnicity, 2016 and 2017, United States[a]

	Race/Ethnicity[b]					
Category	**Asian**	**Black**	**Hispanic**	**Native American**	**White**	**Total[c]**
Students (2016)						
Bachelor[d]	2766 (13.0)	2515 (11.8)	2772 (13.0)	95 (0.4)	13 102 (61.7)	21 250
Master	3270 (15.4)	3261 (15.4)	2525 (11.9)	111 (0.5)	12014 (56.7)	21 181
Doctoral	702 (13.0)	668 (12.4)	534 (9.9)	35 (0.7)	3441 (64.0)	5380
Degrees conferred (2016)						
Bachelor	1016 (15.8)	761 (11.8)	805 (12.5)	36 (0.6)	3818 (59.3)	6436
Master	1457 (16.0)	1201 (13.2)	1044 (11.4)	42 (0.5)	5378 (59.0)	9122
Doctoral	127 (11.9)	95 (8.9)	86 (8.1)	7 (0.7)	753 (70.5)	1068
All faculty (2017)						
Tenured faculty (2017)	414 (13.3)	112 (3.6)	411 (13.2)	7 (0.2)	2167 (69.7)	3111
Professor	313 (10.2)	89 (2.9)	288 (9.4)	7 (0.2)	2377 (77.3)	3074
Associate professor	342 (15.5)	129 (5.9)	199 (9.0)	7 (0.3)	1526 (69.3)	2203
Assistant professor	396 (16.6)	232 (9.8)	160 (6.7)	8 (0.3)	1583 (66.5)	2379
All ranks	1051 (13.7)	450 (5.9)	647 (8.5)	22 (0.3)	5486 (71.7)	7656

[a]Data are unpublished and are available from the Association of Schools and Programs of Public Health Data Center. Also, data are from all member institutions ($n = 89$ in 2016; $n = 85$ in 2017) as of the year designated in the table. All values are reported as number (percentage) unless otherwise indicated.
[b]Persons of unknown race, those who indicated $\geq$2 races, and foreign nationals were excluded from analysis. Only the Hispanic category includes Hispanic students or faculty. The data do not include Hawaii. The count for the Native Hawaiian/Pacific Islander category was small and was not included.
[c]Percentages may not total to 100 due to rounding.
[d]Denominator for percentages in each row is in the total column for that row.

In 2017, ASPPH conducted a survey of member institutions on racial/ethnic diversity and inclusion in public health education. Responding members reported a variety of student- and faculty-focused initiatives to promote racial/ethnic diversity and inclusion (ASPPH, Diversity and Inclusion in Public Health Education: Survey Results 2017, unpublished report, 2018). Student-focused initiatives included efforts to recruit racially/ethnically diverse students (eg, information sessions on the application process and financial aid; offering grants and scholarships), student organizations, resources for underrepresented minority students, efforts to create and sustain a welcoming environment, orientation programs, and retention initiatives (eg, pre-entrance summer programs, mentoring programs).

Faculty-focused initiatives include various efforts. For example, to recruit racially/ethnically diverse faculty, institutions might create faculty search committees that represent a cross section of the school and campus, develop programs for doctoral students and postdoctoral fellows that bridge to faculty positions, and offer visiting scholar or faculty exchange programs. The following can create and sustain a welcoming environment for faculty: professional development opportunities that focus on racial/ethnic diversity and inclusion in addition to retention initiatives such as career development programs, leadership opportunities on university and school committees, opportunities for underrepresented racial/ethnic minority junior faculty to come together around issues important to their success, bridge funding that sustains research when external grant funding is lacking, and mentorship for tenure and promotion. An effort that has the potential to assist in the future retention of underrepresented racial/ethnic minority faculty is to conduct exit interviews to understand why they leave. The data obtained can be used to inform future recruitment and retention efforts. In general, additional resources should be provided for racial/ethnic diversity and inclusion (ASPPH, Diversity and Inclusion in Public Health Education: Survey Results 2017, unpublished report, 2018).

In our study, the 2017 faculty data showed an increase in the percentage of faculty that is from a racial/ethnic minority group, but this increase differed by race/ethnicity. Black, Hispanic, and Native American faculty remained disproportionately underrepresented among public health faculty, whereas substantial increases were made among Asians. More work needs to be done to recruit and retain faculty across all racial/ethnic minority groups. One way to recruit and retain racial/ethnic minority faculty is to continue to implement policies, programs, and professional development initiatives across racial/ethnic minority groups.[19] For example, mentoring programs that support and guide racial/ethnic minority faculty to attain tenure could help with retention (ASPPH, Diversity and Inclusion in Public Health Education: Survey Results 2017, unpublished report, 2018). The data reported in our analysis suggest the need for more faculty-focused initiatives that support the goal of helping Hispanic, black, and Native American faculty achieve tenure and ascend the ranks from assistant professor to full professor.

The results of the 2017 ASPPH Diversity and Inclusion Survey determined that the most commonly reported barriers that preclude or limit achieving racial/ethnic diversity and inclusion in schools and programs of public health were lack

of funding and resources (21 of 61 institutions reported this barrier) related to hiring, retention, and scholarships. Lack of funding and resources can lead to recruitment and retention issues (13 of 61 institutions reported this barrier) because of difficulty competing with other institutions (ASPPH, Diversity and Inclusion in Public Health Education: Survey Results 2017, unpublished report, 2018). The lack of a racially/ethnically diverse faculty can limit institutions' potential to maintain a diverse environment that is attractive to racial/ethnic minority students. To address this issue, most ASPPH members have a senior-level position, such as associate dean for diversity and inclusion, and/or a diversity committee charged with increasing racial/ethnic diversity and sustaining an inclusive environment that fosters success among underrepresented racial/ethnic minority students and faculty.

Limitations

This study had several limitations. First, racial/ethnic categorization in the United States has evolved; practices for standard reporting are changing the way data are collected. In the ASPPH data, the Native Hawaiian/Pacific Islander category may have been included in the Asian category before 2010. The counts were small from 2011 (the first year of data collection with Native Hawaiian/Pacific Islander as a separate racial/ethnic subgroup) and later and were not included in our analysis. A total of 135 (79 bachelor's, 53 master's, and 3 doctoral) Native Hawaiian/Pacific Islander students were enrolled in ASPPH-member institutions in 2016, comprising <0.5% of the student body. For comparisons over time, we presented racial/ethnic categories that were consistent with the original analysis based on 1996 racial/ethnic classifications and excluding foreign nationals. The racial/ethnic minority groups used in our analysis (eg, Asian, Hispanic, black) are heterogeneous and comprise racial/ethnic subgroups (eg, Chinese, Korean, Puerto Rican, Brazilian, Jamaican, African American) with subgroup patterns that may differ from those presented in our study. Some racial/ethnic minority groups also may contain foreign-born US citizens; however, data on country of birth were not available in these data. Second, we were unable to examine 20-year changes in undergraduate student enrollment and graduation, because data collection at this level began in 2013. However, we presented the 2016 data as a benchmark for future evaluation because undergraduate education is a new entry point into the field of public health with the potential to affect the racial/ethnic diversity of graduate students and faculty in the future. Third, these data are self-reported by ASPPH-member institutions and are subject to nonresponse error. Fourth, only schools of public health were included in the cohort to examine changes over time. Public health programs were excluded from the 20-year analysis because they were not member institutions in 1996. We presented data for all current ASPPH members (schools and programs of public health); although the characteristics of the samples are similar, we noted minor differences in racial/ethnic composition among students, graduates, and faculty between the samples.

Conclusions

Racial/ethnic diversity in academic public health has broad implications for racial/ethnic diversity in the public health workforce. A racially/ethnically diverse workforce has the potential to increase cultural competency and reduce racial/ethnic disparities, one of the most intractable issues in public health.[5,6,9,20,21] With the increase in undergraduate public health majors at colleges and universities across the country, exposure to public health is now happening at the undergraduate level, which was not the case 20 years ago.[14] Undergraduate programs are more racially/ethnically diverse than graduate programs; therefore, introducing students to public health careers at the undergraduate level has the potential to diversify the public health workforce and the graduate student body and faculty of the future. As the percentage of racial/ethnic minority groups in the US population increases, the public health workforce should reflect the population it is intended to serve.

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