



Systemic and institutionalized racism, not achievement gap factors, limit the success of Black, Indigenous, and People of Color in dietetics education and credentialing

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Abstract

Our aim was to explore racial/ethnic differences on achievement and opportunity gap factors in nutrition students and identify factors related to the pathway to become a Registered Dietitian Nutritionist (RDN). An online survey was completed by 1447 current or recent dietetic students and interns, some of whom identified as RDNs and/or Nutrition and Dietetic Technician, Registered (NDTRs). The survey consisted of validated scales measuring academic confidence, mentoring, racial climate, grit, and time management, and questions measuring socio-economic factors. Analysis included descriptive statistics, multiple regression, t-tests, and chi-squares. No differences were observed between the scores of Black, Indigenous, and participants of color (BIPOC) and White participants on academic scales. BIPOC experienced a more negative racial climate than White participants ($p < 0.05$). Black dietetics students are also at particular economic disadvantage compared to other participants of color. Ultimately, Black and BIPOC are as academically prepared as White participants but institutionalized and structural racism (e.g., opportunity gap factors) limit their opportunities to succeed.

Keywords: racial diversity; educational attainment; dietetics education; institutional racism; systemic racism; opportunity gap

Introduction

There is a known racial/ethnic disparity in the composition of Registered Dietitian Nutritionists (RDNs) that has persisted over time and failed to improve, even as the enrollment of students of color in higher education has increased 15% in recent decades (Burt et al., 2018; Espinosa et al., 2019). This disparity may be related to the academically challenging nature of the field, which (in general) requires students to successfully complete an accredited Bachelors or Master's level Didactic Program in Dietetics (DPD), match with a dietetic internship (DI) which is frequently coupled with graduate education, and earn a passing score on the exam to become an RDN. The rates of success in these are not favorable. In 2016 and 2017, the match rates for DIs were 47%

and 53% ("ACEND UPdate" 2017). Passing rates for the exam to become an RDN are only marginally better; in 2017 and 2018, total rates (including first time exam takers and repeat takers) were 59% and 58% ("Registration Examination for Dietitians: Group Performance Statistics, October 1987-June 2019" 2019).

In particular, students of color on path to earn the RDN credential face more barriers than their White peers; in addition to the known barriers that dietetics student face (e.g., academic confidence, difficulty of DPD coursework, navigating the DI application process, support in the DI), students of color also persist at lower rates in higher education (Wynn et al. 2017; Carter and Welner 2013; Burt, Delgado, O'Hara, et al. 2019). Research indicates that persistence among students of

color may be related both to an achievement gap and an opportunity gap (Carter and Welner 2013). The achievement gap (specifically, academic achievement) has been the focus of educational research, which has produced many validated metrics and measures. Using these, achievement gap research in higher education has identified many factors related directly and indirectly to academic success, including financial resources, college readiness (including being a first-generation student), grit, mentoring, self-confidence, familial and friend support, and time management (Strayhorn 2014; Dulabaum 2016).

The opportunity gap refers to the institutionalized disadvantage of students of color; that is, inequitable access to educational opportunity due to systemic or institutionalized racism is a barrier to retaining and graduating students of color (Banks and Dohy 2019; Gusa 2010). However, measures and metrics of the opportunity gap are lacking. Current metrics focus on neighborhood-level data and there are no existing individual-level measures (“The Childhood Opportunity Gap: Understanding It. Measuring It. Closing It.” 2019). While systemic racism impacts all students of color, Black students may be more affected and thus, less likely to graduate (Banks and Dohy 2019). Black students experience racism both as systemic inequities that limit individuals from achieving their full potential as well as overt stereotyping that biases how they are perceived, making it less likely they will persist (Johnson-Ahorlu 2012). Moreover, stereotype threat research indicates that Black men, in particular, internalize racist stereotypes which causes a self-imposed academic handicap (Tyler et al. 2016).

To date, there have been no large sample studies of persistence in dietetics education nor have there been studies that compare the experiences of White students to the experiences of students of color. The degree to which academic and opportunity gap factors affect DPD students, dietetic interns, or newly credentialed RDNs is unknown. Knowing these might indicate where resources could be directed to retain a more diverse and inclusive group of undergraduate and graduate students in nutrition and dietetics by providing students of color with the support integral to success. Therefore, the purpose of this study is to identify factors related to persistence in higher education to become an RDN and determine if racial/ethnic differences exist on achievement and opportunity barriers to educational attainment in dietetics.

Methods

A 46-item online survey was distributed to a sample of newly credentialed and aspiring RDNs across the United States during winter/spring 2019. This study was reviewed and approved by the Lehman College Institutional Review Board, protocol #2018-1392. Written informed consent was obtained from all participants online, prior to completing the survey.

Survey Development

A survey was developed to collect information in the following areas: demographics, pathway to becoming a registered dietitian nutritionist (RDN) (including educational achievement and professional status), mentoring, academic confidence, grit, and perceptions of racial/ethnic climate.

Demographics

Demographic and personal information collected included gender, age, race/ethnicity, household income, geographic location, financial support while pursuing education/professional credentialing, financial aid for education, personal aid (e.g., SNAP, disability, Medicaid), and responsibility to care for family members/dependents. A more comprehensive set of race/ethnicity categories were developed for the current study, as the two United States Census questions for race and ethnicity, typically used in research as a way to compare samples to the population of US adults, have been criticized as incomplete and inconsistent with racial and ethnic identification (Telles 2018). It has been recommended that one comprehensive question is more appropriate. Since race/ethnicity is a focus of the current study, more distinct and comprehensive geographic-based categories were developed, as geographic origin has found to be a determinant in racial/ethnic self-classification. As such, the current study operationalized one race/ethnicity question comprised of the following 11 categories: African/African-American, Afro-Caribbean or Afro-Latinx, Central or South American Latinx, North American or Caribbean Latinx, Native American/Alaskan Native, Middle Eastern, Indian/other nation in the Indian subcontinent, Pacific Islander, East Asian, White, and Two or more races/ethnicities.

RDN Pathway

Questions aimed to gather information about educational pathway and achievement information inquired about whether or not each participant was the first in his/her family to attend college, connections in health

professions, degree earned, and reasons for choosing nutrition/dietetics. These questions were designed to incorporate information about known barriers to entering dietetics and about participants' motivation and persistence along the educational pathway (Wynn et al. 2017; Burt, Delgado, O'Hara, et al. 2019). Information gathered about professional status included if dietetics was each participants' first career, volunteering and employment in a health field, dietetic credential status, and reasons for choosing a dietetic internship.

Finally, questions were included to assess short and long-term intent in dietetics. As some research indicates that high school students of color are less likely to hold goals for higher education and that in some cases, aspiring to higher education goals is related to higher levels of stress, which may ultimately impact their success (Turcios-Cotto and Milan 2013). Though participants for the current study were required to be, at minimum, pursuing dietetics education in higher education settings, intent to persist and complete higher education, match with a dietetic internship, and sit for the registration exam (all of which align with typical educational environment and activities) may be important factors. That is, intent to become an RDN may indicate a commitment to or interest in educational goals. For the current study, short term intent was defined as the intent to apply for (or a successful application to) a dietetic internship. Long term intent was defined as the intent to sit for (or successful completion of) the exam to become an RDN.

Academic Confidence

Academic confidence has been identified as a potential barrier to students of color during dietetics education but has not been assessed on a large scale (Burt, Delgado, O'Hara, et al. 2019). The Academic Behavioural Confidence (ABC scale), a validated 17-item, 4 factor scale was used to measure participants' grades, verbalizing, studying, and attendance (Sander and Sanders 2009).

Grit

Grit has been identified as a potentially important factor in educational persistence and achievement for students in general and among students of color in college (Strayhorn 2014; Muenks et al. 2017; Duckworth and Quinn 2009). However, grit has not yet been explored in relation to persons in the dietetics profession. As such, the 8-item Short Grit Scale was included in this survey (Duckworth and Quinn 2009).

Mentoring

The College Student Mentoring Scale (CSMS), a validated measure of students' perceptions of mentoring support received during college, was used to assess perception of support in the following areas: psychological and emotional support, degree and career support, academic subject knowledge support, and existence of a role model (Crisp 2009). In addition to the CSMS, questions were developed to gather information about student's utilization of on and off campus resources. Examples of on-campus resources included peer mentoring, faculty, and mentoring services and off-campus resources examples included community programs, private services, church or family.

Racial Climate

Racial climate included questions about how participants perceived the climate around race/ethnicity, diversity, and inclusion at the institution at which they pursued their Didactic Program in Dietetics (DPD) using a modified version of the Training Our Campuses Against Racism (TOCAR) survey (May-Machunda and White 2003). The portion of the TOCAR survey used in this study included items that collected information about participants' perceptions of diversity, inclusion, and racism on their DPD campus.

Time management

The Time Management Behavior Scale (TMBS) was developed and validated for a college-aged population (Macan, et al. 1990). It measures four factors related to time management: setting goals and priorities, mechanics (planning and scheduling), perceived control of time and preference for disorganization.

Participants and Recruitment

As the population of interest for this study was persons who are pursuing undergraduate or graduate dietetics education, there was no single way to reach potential participants. Surveying through the Academy of Nutrition and Dietetics (the leading professional organization) would have only obtained a sample of those who chose to join; it would not capture students who opted out of membership, students who didn't persist and/or students who chose other pathways. As such, the survey was disseminated to current DPD program directors and DI program directors. Moreover, since a diverse sample was desired, it was also sent to the chairs of the Academy of Nutrition and Dietetics' race/ethnicity-based Member Interest

Groups (MIG) and Dietetic Practice Groups (DPG). In total, the survey was sent (via email) to 551 recipients, including 61 Dietetic Coordinated Program Directors, 215 Directors of Didactic Programs in Dietetics, 259 Dietetic Internship Directors, seven chairs of MIGs of interest and nine chairs of DPGs of interest. Program Directors and Chairs were asked to distribute the survey to current students/interns, alumni, and/or group members. An initial email was sent on February 12th, 2019 and a follow-up email was sent one week later if the email was unopened. A reminder email was sent on March 12th, 2019 and a follow-up email was sent again one week later, if the reminder email was unopened. Participants (i.e. students who completed the survey) were invited to opt into a raffle to win a \$100 VISA gift card.

Statistical Analysis

Given the particular focus of this study on systemic racism, the racial/ethnic classification of participants was especially important. In order to ensure that analyses were adequately powered, combining the 11 race/ethnicity categories into broad groups was warranted. The White group consisted only of those participants who identified as White. A Black, Indigenous, and Persons of Color (BIPOC) subgroup was created and consisted of all other racial/ethnic categories except those persons who identified as having “two or more races” (because their identification with a broader group was unknown). These two groups (White and BIPOC) were used in all analyses. When significant differences emerged between White and BIPOC, further investigation was conducted to determine if differences existed between Black and other participants of color (oPOC). Those identifying as African/African-American, Afro-Caribbean or Afro-Latinx were combined into a ‘Black’ category. Other participants of color consisted of all other racial/ethnic categories except those persons who identified as having “two or more races” (same reason as above).

Embedded in this research question is the assumption that students intend to pursue RDN credentialing. However, if students do not intend to pursue the credential, then there may be implications for their persistence (or lack thereof) in the educational pathway. As a way to make this assumption more explicit and control for it in analyses, two survey questions were used as a proxy to measure participants short and long-term intent in the profession. Short-term intent was measured by asking participants if they intend to

apply (or applied) to the dietetic internship. Long term intent was measured by asking participants if they intend to take the examination to become an RDN. Both questions were used to create dichotomous short-term intent and long term-intent variables. Lastly, an average score for each participant was calculated for all of the scales (mentoring/CSMS, academic confidence/ABC, grit, time management/TMBS, and perceived climate/TOCAR).

The Statistical Package for Social Sciences (SPSS) version 24 was used to analyze descriptive statistics and conduct a multiple linear regression analysis on independent predictors of a high score on each scale, controlling for race (White/BIPOC), gender, age, income, short-term intent, and long-term intent (*IBM SPSS Statistics* (version 24) 2016). When race emerged as a significant predictor of a scale score, the regression model was used to conduct the same analysis with three racial/ethnic groups (White/Black/oPOC) and t-tests were used to determine if and where differences existed between groups.

Chi-square analyses were also performed to determine if differences exist between White participants and BIPOC on other variables (e.g., employment in a health field, financial support, reasons for choosing nutrition and dietetics, grade point average, barriers in dietetics). Again, when significant differences between White and BIPOC were observed, additional chi-square analyses were used to investigate differences within the participants of color sub-group between Black participants and oPOC.

Results

None of the 551 emails were rejected (e.g., “bounced back”), indicating that all email addresses were valid. Though a response from email recipients was not requested or required, 21 recipients responded that they distributed the survey to their networks. 1447 surveys were returned. Since the total number of Directors or Chairs who distributed the survey is unknown, as is the number of students and graduates who received the link to the survey, the response rate is unknown. The surveys were assessed for duplicates and none were found, thus, no surveys were excluded.

Participant Demographics

Participants (n=1447) were mostly female (92.4%), between 18-24 years old (48.8%), and White (69.4%). There was representation of at least one person in

each of the 11 race/ethnicity categories; the largest proportion of BIPOC identified as East Asian (6.0%), African/African American (4.6%), and Central or South American Latinx (4.5%). Black participants (i.e., those of African descent) comprised 6.1% of the sample (n=89). Many participants (42.4%) reported a low annual household income (<\$35k) and identified as a current undergraduate, graduate, or non-matriculating DPD student (53.1%). Participants were from 45 states, Washington, D.C, and Puerto Rico (Alaska, Delaware, Maine, Mississippi, and New Hampshire were not represented). Regional distribution of participants was fairly equal; 27.6% were from the Northeast (n=399), 26.0% from the South (n=375), 17.3% from the Midwest (n=250), and 29.0% from the West (n=419). Less than 1% of participants were from Puerto Rico (n=4). Participants were from many countries and regions, including the United States (n= 1342), Africa (n=4), the Bahamas and Caribbean Islands (n=6), Canada (n=4), Central American (n=5), East Asia (n=20), Europe (n=4), Mexico (n=8), the Middle East (n=15), India (and the Indian subcontinent) (n=3), South America (n=16), South Pacific (n=7). Additional demographic information is reported in table 1.

Table 1: Demographics of a nationwide survey of dietetics students and professionals (n=1447)

	n (%)
Gender	
Male	107 (7.4)
Female	1,337 (92.4)
Other	3 (0.2)
Age	
18-24 years old	706 (48.8)
25-34 years old	584 (40.4)
35-44 years old	108 (7.5)
45-54 years old	32 (2.2)
> 55 years old	17 (1.2)
Race/Ethnicity	
African/African American	67 (4.6)
Afro-Caribbean or Afro-Latinx	22 (1.5)
Central or South American Latinx	65 (4.5)
North American or Caribbean Latinx	45 (3.1)
Native American/Alaskan Native	1 (0.07)

Middle Eastern	31 (2.1)
Indian/other nation in Indian subcontinent	15 (1.0)
Pacific Islander	17 (1.2)
East Asian	87 (6.0)
White	1004 (69.4)
Two or more races/ethnicities	93 (6.4)

Annual household income

<\$35,000	613 (42.4)
\$35,000 to less than \$50,000	196 (13.5)
\$50,000 to less than \$75,000	219 (15.1)
\$75,000 to less than \$100,000	161 (11.1)
>\$100,000	258 (17.8)

Geographic location

Urban	864 (60.1)
Suburban	466 (32.4)
Rural	107 (7.5)

Nutrition/dietetics, education (select all that apply)

Non-degree seeking (e.g., completing DPD courses)	42 (2.9)
Currently a matriculating, undergraduate DPD student	431 (29.8)
Completed a DPD undergraduate program	510 (35.2)
Currently a matriculating DPD graduate student	295 (20.4)
Completed a DPD graduate program	258 (17.8)
Nutrition/dietetics training	
No plans to apply for the dietetic internship	74 (5.5)
Plan to apply to a dietetic internship for the first time	411 (30.6)
Applied to a DI in the past and didn't match, do not plan to re-apply	10 (0.7)
Applied to a DI in the past and didn't match, plan to re-apply	12 (0.9)
Matched with a DI	414 (30.8)
Completed a DI	421 (31.4)

Credential

RDN	388 (28.9)
NDTR	41 (3.1)
Neither	900 (67.1)
Both	13 (1.0)

Academic and Educational Environment Scale Results

Multiple regression analysis was used to test which factors (race, gender, age, income, short-term intent, long term intent) predicted a high score on each scale. Results indicate that in general, demographic and intent variables did not predict scale scores. There were no significant predictors on College Student Mentoring Scale scores or the Time Management Behavior Scale scores. Earning between \$50k-\$74k had a significantly negative effect on Academic Behavioral Confidence score ($b=-0.099$, $SE=0.044$, $p<0.05$) and identifying as non-binary gender ($b=0.918$, $SE=0.375$, $p<0.05$) or age between 35-44 years old ($b=0.131$, $SE=0.064$, $p<0.05$) had significantly positive effects on Grit score. The analysis of participant's perception of campus climate revealed the greatest number of predictors; identifying as a BIPOC ($b=-0.078$, $SE=0.033$, $p<0.05$), female ($b=-0.124$, $SE=0.056$, $p<0.05$), and earning between \$50k-\$74k ($b=-0.139$, $SE=0.042$, $p<0.01$), had a significantly negative effect on one's perception of the racial climate on campus while being between 25-34 ($b=0.071$, $SE=0.030$, $p<0.05$) or 45-54 years old ($b=0.257$, $SE=0.096$, $p<0.01$) had a statistically significantly positive effect on one's perception of racial climate on campus.

Further racial (White, Black, and oPOC) sub-group analysis indicated that identifying as an oPOC (e.g., not

Black) was a significant predictor of one's perception of campus climate ($b=-0.076$, $SE=0.037$, $p<0.05$), but being Black was not ($b=-0.085$, $SE=0.058$, $p=0.145$). More specifically, identifying as a non-Black person of color had a significant negative effect on one's perception of racial climate. Being female ($b=-0.124$, $SE=0.056$, $p<0.05$) and earning between \$50k-\$74k ($b=-0.138$, $SE=0.043$, $p<0.01$), remained significantly negative effects on one's perception of racial climate, while being 25-34 years old ($b=0.071$, $SE=0.030$, $p<0.05$) or between 45-54 years old ($b=-0.257$, $SE=0.096$, $p<0.01$) had a significant positive effect on one's perception of climate.

T-test analyses revealed that the only significant differences between White participants and BIPOC on each scale were on the TOCAR scale which measured participants' perception of racial climate ($p<0.05$). White participants (mean = 3.57) perceived a better racial climate than BIPOC (mean = 3.49). There were also significant differences between White and Black participants (mean = 3.47, $p<0.05$) and White and oPOC (mean = 3.50, $p<0.05$). No significant differences were observed between Black participants and oPOC. For all other scales, there were no significant differences between BIPOC and White participants scores. All results of the regression analyses are presented in table 2.

Table 2. Predictors of high academic confidence on all scales using a sample of dietetics students and professionals

Variable	Beta estimate	SE	t-value	p-value
Academic Behavior Confidence^a				
Race				
White	reference value			
Person of Color	0.053	0.033	1.576	0.115
Gender				
Male	reference value			
Female	0.100	0.059	1.697	0.090
Other	-0.103	0.477	-0.215	0.829
Age				
<25 years old	reference value			
25-34	0.038	0.031	1.193	0.233
35-44	0.059	0.060	0.985	0.325
45-54	0.105	0.098	1.072	0.284
>55 years old	0.017	0.135	0.125	0.901
Income				
< \$35k	reference value			
\$35k-\$49k	-0.058	0.047	-1.231	0.219
\$50k-\$74k	-0.099	0.044	-2.253	0.024*

\$75k-\$100k	0.007	0.050	0.147	0.883
>\$100k	-0.013	0.042	-0.320	0.749
Short term intent	-0.106	0.070	-1.565	0.118
Long term intent	0.090	0.065	1.401	0.161

Grit^b

Race				
White	reference value			
Person of Color	0.0218	0.0361	0.604	0.546
Gender				
Male	reference value			
Female	0.007	0.061	0.116	0.908
Other	0.918	0.375	2.448	0.015*
Age				
<25 years old	reference value			
25-34	-0.042	0.034	-1.258	0.209
35-44	0.131	0.064	2.038	0.042*
45-54	0.0260	0.105	0.249	0.803
>55 years old	0.134	0.144	0.930	0.353
Income				
< \$35k	reference value			
\$35k-\$49k	0.004	0.049	0.089	0.929
\$50k-\$74k	-0.027	0.046	-0.575	0.565
\$75k-\$100k	-0.078	0.053	-1.471	0.142
>\$100k	-0.033	0.045	-0.726	0.468
Short term intent	0.007	0.076	0.088	0.930
Long term intent	0.075	0.069	1.079	0.281

Mentoring^c

Race				
White	reference value			
Person of Color	0.065	0.063	1.039	0.299
Gender				
Male	reference value			
Female	0.074	0.107	0.696	0.487
Other	0.030	0.600	0.050	0.961
Age				
<25 years old	reference value			
25-34	-0.003	0.058	-0.048	0.961
35-44	-0.078	0.110	-0.708	0.479
45-54	0.166	0.192	0.862	0.389
>55 years old	-0.231	0.230	-1.002	0.316
Income				
< \$35k	reference value			
\$35k-\$49k	-0.036	0.083	-0.430	0.668
\$50k-\$74k	0.062	0.082	0.755	0.451
\$75k-\$100k	0.109	0.091	1.203	0.229
>\$100k	0.055	0.077	0.705	0.481

Short term intent	-0.241	0.126	-1.906	0.057
Long term intent	0.154	0.119	1.293	0.196

TOCAR^d

Race				
White	reference value			
Person of Color	-0.078	0.033	-2.363	0.018*
Gender				
Male	reference value			
Female	-0.124	0.056	-2.214	0.027*
Other	0.494	0.357	1.385	0.166
Age				
<25 years old	reference value			
25-34	0.071	0.030	2.343	0.019*
3 5-44	0.009	0.059	0.147	0.883
45-54	0.257	0.096	2.677	0.008**
>55 years old	0.111	0.137	0.814	0.416
Income				
< \$35k	reference value			
\$35k-\$49k	-0.043	0.044	-0.976	0.329
\$50k-\$74k	-0.139	0.042	-3.265	0.001**
\$75k-\$100k	-0.057	0.048	-1.183	0.237
>\$100k	-0.021	0.041	-0.524	0.600
Short term intent	0.028	0.068	0.411	0.681
Long term intent	0.026	0.063	0.412	0.681

TOCAR, racial/ethnic subgroup analysis^e

Race				
White	reference value			
Black	-0.085	0.058	-1.458	0.145
Person of Color	-0.076	0.037	-2.035	0.042*
Gender				
Male	reference value			
Female	-0.124	0.056	-2.206	0.028*
Other	0.494	0.357	1.385	0.166
Age				
<25 years old	reference value			
25-34	0.071	0.030	2.333	0.019*
35-44	0.009	0.059	0.158	0.874
45-54	0.257	0.096	2.679	0.007**
>55 years old	0.112	0.137	0.821	0.412
Income				
< \$35k	reference value			
\$35k-\$49k	-0.043	0.044	-0.974	0.330
\$50k-\$74k	-0.138	0.043	-3.242	0.001**
\$75k-\$100k	-0.057	0.048	-1.180	0.238
>\$100k	-0.021	0.041	-0.521	0.603
Short term intent	0.028	0.068	0.405	0.685

Long term intent	0.026	0.063	0.418	0.676
Time Management^f				
Race				
White	reference value			
Person of Color	0.012	0.034	0.348	0.728
Gender				
Male	reference value			
Female	0.009	0.060	0.141	0.888
Other	0.194	0.488	0.398	0.691
Age				
<25 years old	reference value			
25-34	-0.008	0.032	-0.236	0.814
35-44	0.009	0.061	0.152	0.879
45-54	-0.036	0.100	-0.356	0.722
>55 years old	0.241	0.138	1.750	0.080
Income				
< \$35k	reference value			
\$35k-\$49k	0.002	0.048	0.047	0.963
\$50k-\$74k	-0.067	0.045	-1.488	0.137
\$75k-\$100k	-0.049	0.051	-0.950	0.342
>\$100k	-0.004	0.043	-0.104	0.917
Short term intent	0.015	0.072	0.211	0.833
Long term intent	-0.018	0.066	-0.273	0.785

^aR² = 0.016, Adjusted R² = 0.003, F (13, 1039)= 1.278

^bR² = 0.016, Adjusted R² = 0.005, F (13, 1136)= 1.416

^cR² = 0.010, Adjusted R² = -0.004, F (13, 965)= 0.732

^dR² = 0.027, Adjusted R² = 0.017, F (13, 1239)= 2.662

^eR² = 0.027, Adjusted R² = 0.016, F (14, 1238)= 0.002

^fR² = 0.007, Adjusted R² = -0.005, F (13, 1039)= 0.530

* p<0.05

** p<0.01

Persistence in Dietetics Education and Credentialing Results

Most participants (53.1%) reported being currently enrolled in DPD coursework (n=768) and 26.8% already obtained the RDN credential (n=388). Of those who obtained the RDN credential, 91.8% became credentialed after 2010 (the year during which the number of hours for the DI increased to 1200). At the time of the survey, nearly 35% of BIPOC (compared to 27.6% of White participants) were enrolled in an undergraduate DPD program. No statistically significant difference was found between White participants and BIPOC on their intention to apply to a DI, however there were significant differences between the grade point averages (GPAs) of White participants and BIPOC. BIPOC were more likely to report lower GPAs than White students (p<0.001) (but no GPA differences

existed between Black and oPOC). Of those who did not apply to the DI after completing the DPD coursework, significantly more BIPOC reported economic reasons and an uncertainty of their ability to match (p<0.001). There were also significant differences within BIPOC (p<0.001) with regard to the DI; Black participants more frequently cited 'other reasons' for not applying to a DI than oPOC (36% compared to 4.8%, respectively). Over 80% of oPOC reportedly applied or planned to apply for a DI while only 48.8% of Black participants reportedly applied or planned to apply to a DI.

The analysis on participants' intention to sit for the RDN exam revealed a statistically significant difference between White participants and BIPOC (p<0.001); over 95% of White participants indicated intent to sit for the RDN exam while slightly less than 88% of BIPOC

indicated as such. BIPOC reportedly failed the dietetic internship match (e.g., didn't match) and the RDN exam at significantly higher rates than their White peers ($p < 0.001$ for both). No differences were observed within BIPOC.

Only about one fifth of participants overall (20.3%) reported that they did not experience any barriers pursuing dietetics as a career but for those who did, unfamiliarity with the process of becoming an RDN and cost were most commonly cited (16.4% and 13.6%, respectively). Chi-square analyses revealed no statistically significant differences between BIPOC and

White participants on the barriers they experience pursuing dietetics (unfamiliarity with the profession, unfamiliar with the process to become an RDN, time management, lack of guidance of help, difficulty of coursework, language, no barriers experienced). Participants were offered a write-in option for 'other' barrier and many ($n=154$) wrote "cost" or "financial"; these were coded and analyzed as an answer option and there were no significant differences between White and BIPOC. Additional data about dietetics education and credentialing can be found in table 3.

Table 3. Differences in education and credentialing related characteristics between White and BIPOC participants from a national sample of dietetics students and professionals

	Total ^a n (%)	White n (%)	BIPOC ^b n (%)	Black ^c n (%)	Other POC ^d n (%)
Credential		p < 0.05		p-value is not significant	
RDN	388 (28.9)	293 (31.1)	75 (24.0)	24 (29.6)	51 (22.1)
NDTR	41 (3.1)	27 (2.9)	13 (4.2)	2 (2.5)	11 (4.8)
Neither	900 (67.1)	610 (64.8)	223 (71.5)	55 (67.9)	168 (72.7)
Both	13 (1.0)	11 (1.2)	1 (.3)	0 (0.0)	1 (0.43)
Dietetics education (select all that apply)		p < 0.001		p-value is not significant	
Non-degree seeking (e.g. completing DPD courses)	42 (2.9)	20 (2.0)	18 (5.1)	7 (7.9)	11 (4.2)
Currently a matriculating, undergraduate DPD student	431 (29.8)	277 (27.6)	122 (34.9)	34 (38.2)	88 (33.7)
Completed a DPD undergraduate program	510 (35.2)	369 (36.8)	111 (31.7)	21 (23.6)	90 (34.5)
Currently a matriculating DPD graduate student	295 (20.4)	218 (21.7)	58 (16.6)	15 (16.8)	43 (16.5)
Completed a DPD graduate program	258 (17.8)	186 (18.5)	56 (16.0)	17 (19.1)	89 (34.1)
Overall GPA when applying to the DI		p < 0.001		p-value is not significant	
Less than 3.0	37 (2.8)	20 (2.0)	12 (3.8)	1 (1.2)	20 (8.3)
3.0-3.3	168 (12.5)	111 (11.1)	47 (15.1)	11 (13.5)	36 (15.0)
3.4-3.6	311 (23.2)	224 (22.3)	63 (20.2)	12 (14.8)	51 (21.3)
3.7-4.0	469 (34.9)	366 (36.5)	73 (23.4)	21 (25.9)	52 (21.7)
I don't remember/haven't applied	357 (26.6)	220 (23.4)	117 (37.5)	36 (44.4)	81 (33.8)
Reasons for not applying to DI after DPD		p < 0.001		p < 0.001	
Economic reasons	63 (4.7)	30 (3.2)	25 (8.0)	6 (7.0)	19 (7.0)
Decided against becoming an RDN	32 (2.4)	22 (2.3)	9 (2.9)	2 (2.3)	7 (2.6)
Uncertain of ability to match to a DI	40 (3.0)	17 (1.8)	19 (6.1)	5 (5.8)	14 (5.2)
Other reasons	79 (5.9)	53 (5.6)	18 (5.8)	31 (36.0)	13 (4.8)
Applied (or plan to apply) to the DI (or in coordinated program)	1184 (88.2)	853 (90.6)	260 (83.3)	42 (48.8)	218 (80.4)
Status with the DI		p < 0.001		p-value is not significant	
No plans to apply	74 (5.5)	46 (4.6)	23 (7.4)	7 (8.6)	16 (6.2)
Plan to apply for the first time	411 (30.6)	257 (25.6)	122 (39.1)	31 (38.3)	91 (35.4)
Failed match in the past, no plan to apply again	10 (0.7)	5 (0.5)	5 (1.6)	0 (0.0)	5 (1.9)

Failed match in the past, plan to apply again	12 (0.9)	3 (0.3)	7 (2.2)	0 (0.0)	7 (2.7)
Matched with a DI	414 (30.8)	316 (31.5)	74 (23.7)	18 (22.2)	56 (21.8)
Completed a DI	421 (31.4)	314 (31.3)	81 (26.0)	25 (30.9)	56 (21.8)
Status with the RDN Exam***		p < 0.001		p-value is not significant	
Took and passed the RDN exam	376 (28.0)	288 (28.7)	68 (21.8)	21 (25.9)	47 (20.3)
Failed, plan to take again	20 (1.5)	9 (0.9)	10 (3.2)	3 (3.7)	7 (3.0)
Failed, do not plan to take again	1 (0.1)	0 (0.0)	1 (0.3)	1 (1.2)	0 (0.0)
Didn't take exam, plan to within 6 months	272 (20.3)	204 (20.3)	49 (15.7)	12 (14.8)	37 (16.0)
Didn't take exam, plan to in more than 6 months	586 (43.7)	396 (39.4)	146 (46.8)	37 (45.7)	109 (47.2)
Didn't take exam, do not plan to anytime in the future	87 (6.5)	44 (4.4)	38 (12.2)	7 (8.6)	31 (13.4)
Greatest barrier to pursuing dietetics		p-value is not significant			
Unfamiliarity with the profession	117 (9.5)	80 (9.3)	29 (9.9)	6 (7.8)	23 (11.5)
Unfamiliarity with the process of becoming an RDN	202 (16.4)	146 (17.0)	45 (15.4)	14 (18.2)	31 (15.5)
Time management	112 (9.1)	83 (9.7)	20 (6.9)	4 (5.2)	16 (8.0)
Lack of guidance or help through the DPD or DI	119 (9.6)	86 (10.0)	26 (8.9)	6 (7.8)	20 (10.0)
Difficulty of coursework	158 (12.8)	104 (12.1)	26 (8.9)	11 (14.3)	15 (7.5)
Language	13 (1.1)	7 (0.8)	5 (1.7)	0 (0.0)	5 (2.5)
No barriers	252 (20.4)	181 (21.1)	52 (17.8)	14 (18.2)	38 (19.0)
Other	93 (7.5)	62 (7.2)	29 (9.9)	9 (11.7)	20 (10.0)
Other, write in option: cost	168 (13.6)	109 (12.7)	45 (15.4)	13 (16.9)	32 (16.0)

^a 'Total' includes White participants and participants who identified with a non-White racial/ethnic group, including persons who identified as 'two or more races'

^b Those identifying as 'two or more races' were not included in the subgroup analyses as their identity as a person of color (or not) was unknown

^c count includes participants of African descent (e.g., African/African American and Afro-Caribbean and Afro-Latinx)

^d count includes participants of color other than those identifying as African/African American, and Afro-Caribbean and Afro-Latinx

Exposure to and motivation to pursue health careers

Most participants (75.0%) had one or more parents who attended and graduated from college; they were neither the first to attend (18.7%) nor to graduate (6.3%) from a higher education institution. However, significant differences existed between White participants and BIPOC; BIPOC were more likely to be the first person in their family to attend and graduate from college ($p < 0.001$). There were no statistically significant differences within the BIPOC group. However, Black participants more frequently reported (than oPOC) that they were the not the first person to attend but were the first person to graduate from college (12.4% compared to 6.9% of oPOC and 5.1% of White). oPOC more frequently reported that they were the first person to attend college (32.2% of oPOC compared to 21.3% of Black and 14.6% of White).

Nutrition/dietetics was a first career for 77.8% of participants and many (45.5%) were reportedly working in nutrition or a health field. The most commonly cited

reason for choosing to major in nutrition were to help one's family, friends or community (29.1%), because eating healthy is a personal passion (19.7%), and because nutrition/dietetics has interesting career trajectories (18.9%). Though the most common response was the same for BIPOC and White participants, significant differences were observed in how participants answered this question ($p < 0.01$). Over one third of BIPOC majored in nutrition to help their friends, family, or communities become healthier (34.0%); other common responses were because they wanted to work in a health profession (16.3%) and because eating healthy is a personal passion (15.7%). Differences were also observed between Black and oPOC ($p < 0.05$); Black participants more frequently reported that nutrition/dietetics has interesting career trajectories (23.5% compared to 12.1% of oPOC) and a desire to help their communities become healthier (40.7% compared to 31.6% of oPOC). On the other hand, only about a quarter of White participants chose to major in nutrition because they wanted to help

friends, family or their communities become healthier (27.4%); White participants also majored in nutrition because eating healthy is a personal passion (21.6%), and because nutrition/dietetics has interesting career

trajectories (20.0%). Of the entire sample, there were no participants who chose to major in nutrition because it pays well. All data is presented in table 4.

Table 4: Differences in exposure to education nutrition and dietetics as a career path between White and BIPOC participants from a national sample of dietetics students and professionals

	Total ^a n (%)	White n (%)	BIPOC ^b n (%)	Black ^c n (%)	Other POC ^d n (%)
First person in immediate family to graduate college		p < 0.001		p-value is not significant	
Yes	271 (18.7)	147 (14.6)	103 (29.4)	19 (21.3)	84 (32.2)
Not the first to attend, but first to graduate	91 (6.3)	51 (5.1)	29 (8.3)	11 (12.4)	18 (6.9)
No, not the first to attend or graduate	1085 (75.0)	806 (80.3)	218 (62.3)	59 (66.3)	159 (60.9)
First career is nutrition/dietetics		p-value is not significant			
Yes	1126 (77.8)	780 (77.7)	279 (79.7)	62 (70.0)	217 (83.1)
No	321 (22.2)	224 (22.3)	71 (20.3)	27 (30.3)	44 (16.9)
Employment in health field		p-value is not significant			
Yes, currently work in nutrition	659 (45.5)	468 (46.6)	154 (44.0)	37 (41.6)	117 (45.0)
Yes, currently work in a non-nutrition health field	129 (8.9)	83 (8.3)	33 (9.4)	10 (11.2)	23 (8.8)
No	659 (45.5)	453 (45.1)	163 (46.6)	42 (47.2)	121 (46.5)
Main reason for nutrition major		p < 0.001		p < 0.05	
Nutrition/dietetics has interesting career trajectories	247 (19.0)	188 (20.0)	47 (15.1)	19 (23.5)	28 (12.1)
Nutrition/dietetics pays well	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
I wanted to work in a health profession	183 (14.1)	132 (14.0)	51 (16.3)	5 (6.2)	46 (19.9)
I wanted to help my friends, family, or community become healthier	383 (29.4)	258 (27.4)	106 (34.0)	33 (40.7)	73 (31.6)
Eating healthy is a personal passion	253 (19.4)	203 (21.6)	49 (15.7)	14 (17.3)	35 (15.2)
I like to cook	40 (3.1)	22 (2.4)	16 (5.1)	3 (3.7)	13 (5.6)
I like nutrition science	183 (14.1)	131 (13.9)	40 (12.8)	6 (7.4)	34 (14.7)
A teacher encouraged me	12 (0.9)	7 (0.7)	3 (1.0)	1 (1.2)	2 (0.87)

^a 'Total' includes White participants and participants who identified with a non-White racial/ethnic group, including persons who identified as 'two or more races'

^b Those identifying as 'two or more races' were not included in the subgroup analyses as their identity as a person of color (or not) was unknown

^c count includes participants of African descent (e.g., African/African American and Afro-Caribbean and Afro-Latinx)

^d count includes participants of color other than those identifying as African/African American, and Afro-Caribbean and Afro-Latinx

Financial factors related to dietetics education and credentialing persistence

Participants were overwhelmingly employed during their education; overall, 67.7% reported having part-time employment and 9.8% reported full-time employment (table 5). There was a significant difference between employment and volunteering between White participants and BIPOC (p<0.01). White participants more frequently reported that they were employed part time while BIPOC more frequently reported full-time employment, volunteering part-time, and/

or volunteering full-time. Nearly 75% of participants received some parental support while enrolled in a DPD program, though there was no difference in the parental support received by White participants and BIPOC. Further investigation into BIPOC revealed no significant differences between Black and oPOC; however, Black participants more frequently reported that they were employed full time compared to oPOC (18.0% and 9.2%, respectively). Black participants also reported that they received no financial support from their parents more frequently (33.7%) than oPOC (18.8%).

Table 5. Differences in financial factors related between White participants and Participants of Color from a national sample of dietetics students and professionals

	Total ^a n (%)	White n (%)	BIPOC ^b n (%)	Black ^c n (%)	Other POC ^d n (%)
Employment (select all that apply)		p < 0.01		p-value is not significant	
Part time employee	979 (67.7)	713 (71.0)	206 (58.9)	55 (61.8)	151 (57.9)
Full time employee	142 (9.8)	90 (9.0)	40 (11.4)	16 (18.0)	24 (9.2)
Part time volunteer	549 (37.9)	368 (36.7)	142 (40.6)	28 (31.5)	114 (43.7)
Full time volunteer	12 (0.8)	6 (0.6)	6 (1.7)	1 (1.1)	5 (1.9)
Not employed or volunteering	192 (13.3)	126 (12.5)	54 (15.4)	10 (11.2)	44 (16.9)
Parental financial support		p-value is not significant			
Significant support	645 (44.6)	443 (44.1)	169 (48.3)	39 (43.8)	130 (49.8)
Some support	429 (29.6)	295 (29.4)	102 (29.1)	20 (22.5)	82 (31.4)
No support	373 (25.8)	266 (26.5)	79 (22.6)	30 (33.7)	49 (18.8)
Financial aid received (select all that apply)		p < 0.001		p-value is not significant	
Education loans (that must be repaid)	765 (52.9)	544 (54.2)	172 (49.1)	56 (62.9)	116 (44.4)
Financial aid (not for repayment)	447 (30.9)	284 (28.3)	127 (36.3)	27 (30.3)	100 (38.3)
GI Bill support (for veterans)	28 (1.9)	23 (2.3)	4 (1.1)	2 (2.2)	2 (0.1)
Scholarships	650 (44.9)	479 (47.7)	128 (36.6)	35 (39.3)	93 (35.6)
Grants	277 (19.1)	168 (16.7)	83 (23.7)	23 (25.8)	60 (23.0)
Work-study	158 (10.9)	96 (9.6)	48 (13.7)	12 (13.5)	36 (13.8)
No aid	244 (16.9)	164 (16.3)	68 (19.4)	9 (10.1)	59 (22.6)
Personal aid received		p < 0.001		p-value is not significant	
Yes SNAP, Disability, or Medicaid	187 (12.9)	101 (10.1)	66 (18.6)	17 (19.1)	49 (18.8)
Not SNAP, Disability, or Medicaid	1260 (87.1)	903 (89.9)	284 (81.1)	72 (80.9)	212 (81.2)
Cost factors for applying to DI		p < 0.001		p-value is not significant	
Only applied to university-affiliated program to qualify for financial aid	294 (21.9)	200 (21.3)	78 (25.0)	24 (29.6)	54 (23.5)
Only applied to programs that offered stipends	84 (6.3)	52 (5.5)	25 (8.0)	9 (11.1)	15 (6.5)
Only applied to internships that offered support (e.g. grants, scholarships)	195 (14.5)	111 (11.8)	65 (20.8)	18 (22.2)	47 (20.4)
Applied to all programs, regardless of cost	468 (34.9)	343 (36.5)	95 (30.4)	21 (25.9)	74 (32.2)
Cost wasn't a factor for decision making	301 (22.4)	235 (25.0)	49 (15.7)	9 (11.1)	40 (17.4)
Means of paying for the DI (select all that apply)		p < 0.05		p < 0.05	
Personal loans	164 (16.0)	113 (15.5)	37 (16.7)	11 (12.4)	26 (9.2)
Personal savings	462 (45.1)	337 (46.1)	86 (38.9)	17 (19.1)	69 (24.3)
Family savings (e.g. spouse, parents, inheritance)	477 (46.6)	351 (48.0)	95 (43.0)	17 (19.1)	78 (27.5)
Private loans (e.g. bank)	90 (8.8)	66 (9.0)	13 (5.9)	1 (1.1)	12 (4.2)
Federal loans (e.g. for education)	366 (35.7)	260 (35.6)	83 (37.6)	30 (33.7)	53 (18.7)
Scholarships or grants	242 (23.6)	152 (20.8)	68 (30.8)	22 (24.7)	46 (16.2)

^a 'Total' includes White participants and participants who identified with a non-White racial/ethnic group, including persons who identified as 'two or more races'

^b Those identifying as 'two or more races' were not included in the subgroup analyses as their identity as a person of color (or not) was unknown

^c count includes participants of African descent (e.g., African/African American and Afro-Caribbean and Afro-Latinx)

^d count includes participants of color other than those identifying as African/African American, and Afro-Caribbean and Afro-Latinx

Two types of aid were measured using the survey; financial support for education and personal aid (e.g. income-based federal aid like the Supplemental Nutrition Assistance Program). Significant differences were found in the types of support that White participants and BIPOC received ($p < 0.001$). Both White participants and BIPOC most frequently reported receiving education loans (54.2% and 49.1%) or scholarships (47.7% and 36.6%) though BIPOC tended to receive less of those types of support. BIPOC more frequently reported receiving financial aid (not for repayment) than White participants (36.3% and 28.3%), grants (23.7% and 16.7%), and work study (13.6% and 9.6%). There was also a significant difference in the types of personal aid received by White participants and BIPOC ($p < 0.001$). BIPOC more frequently reported all types of personal aid (Supplemental Nutrition Assistance Program benefits, disability benefits, and Medicaid). No differences were observed within the BIPOC group.

The financial burden of the DI disparately impacted racial groups. BIPOC more frequently reported that they limited their applications for the DI to institutions where they could receive support, like Veterans Affairs programs with stipends or higher education institutions with financial aid available ($p < 0.001$). White participants more frequently reported that cost wasn't a factor in their decision (25.0% compared to only 15.7% of BIPOC) or that they applied to all DI programs they were interested in, regardless of cost (36.5% compared to only 30.4% of BIPOC). Finally, differences were also observed in the way that participants paid for the DI. Overall, most participants funded their dietetic internships, in part, by personal (45.1%) or family savings (46.6%) and many reported receiving federal loans (35.7%). However, BIPOC less frequently reported relying on savings and more frequently reported receiving scholarships or grants than White participants ($p < 0.05$). There were also significant differences within BIPOC ($p < 0.05$). Black participants more frequently reported using federal loans (33.7% compared to 18.7% of oPOC) and less frequently reported using personal or family savings.

Discussion

This study is the largest and most diverse sample of dietetics students and newly credentialed professionals conducted to date and the sample obtained reflected greater racial/ethnic diversity than the population of RDNs ("Registry Statistics" 2019). This study

operationalized currently existing metrics and measures to explore achievement factors related to persistence for which racial/ethnic gaps exist in other student populations. The results of this study indicate that other reasons, like systemic and institutionalized racism (e.g., opportunity gap factors), may be driving the racial/ethnic disparity between dietetics students who succeed and those who don't.

That White participants and BIPOC scored similarly on all scales related to academic attitudes and skills (academic confidence, mentoring, time management, grit) indicates that there are no disparities on factors known to fall, in other majors and fields, along racial/ethnic lines.

In fact, these findings contradict other research that has found that students of color lack adequate mentoring, particularly in dietetics. Though participants in both race categories scored similarly on the grit scale, it is possible that grit alone does not adequately capture the ability to persevere, particularly in academic settings; agency may also be a necessary skill (Kundu 2017). Nonetheless, these findings indicate that race/ethnicity is not a predictor of academic skills and that there are no differences between the barriers to dietetics education and credentialing that BIPOC and White participants reported. Moreover, that there were no significant differences between the barriers that White participants and BIPOC experience corroborates findings from the TMBS (time management) and CSMS (mentoring) scales.

However, BIPOC in this study faced greater challenges than White participants. BIPOC more frequently reported that they were first in their family to attend and graduate college, which presents many barriers to success, including a lack of college readiness, family support, and/or financial stability (Falcon 2015). Though White participants and BIPOC were employed at about the same rates, further examination reveals that Black participants more frequently reported working full time and volunteering less than other participants (both oPOC and White participants). Black participants and BIPOC in general also received more federally funded financial assistance and relied less on family savings, indicating a disparity in economic advantage that cannot be fully understood from this study. For instance, it is not known how participants defined part-time or full-time employment (e.g., how many hours they were working) nor is it known how much they were earning. However,

a systemic wage gap exists nationally and on average, women (a large majority of the participants in this study) of color earn less than their White peers (Hegewisch 2018). The wage gap may be related to the economic disparity observed in this study, as it is one of many factors that contributes to disparate wealth accumulation over time (Hanks, Solomon, and Weller 2018); that is, Black families and families of color have had less opportunity to accumulate wealth and transfer it between generations (Hamilton et al. 2015). Though all participants' average household income was low (<\$35k/year), it is likely, in part, because most participants were students. Some research indicates that first generation college students are often working many hours for low pay yet, those who persist in higher education tend to work fewer hours (and engage more in the school community) (Garriott 2019; Hein, Smerdon, and Sambolt 2013).

Still, the findings of this study clearly indicate that BIPOC dietetics students (and those who are newly credentialed professionals) make decisions about if they will apply to a DI and which DIs they apply to based on financial considerations. BIPOC participants reportedly planned to apply or applied to a DI less frequently than White participants in general. Particularly alarming, however, is the finding that Black participants reportedly applied to a DI at roughly half the rate that White participants or oPOC did. BIPOC participants cited economic reasons or because of an uncertainty of their ability to match (perhaps related to lower GPAs, making them less competitive applicants). Moreover, BIPOC generally have fewer financial resources and are receiving financial aid at higher rates than White participants, which may be of importance because qualifying for financial aid often means maintaining a high course load (number of credits). Doing so may be particularly burdensome for people who also work (Dulabaum 2016). It is possible that as a result, their GPA suffers; and as mentioned above in this study, BIPOC reported lower GPAs at the time of DI application than White participants.

There are clearly differences among dietetics students and RDNS of color in factors other than cost as well. BIPOC are failing the DI match and the RDN exam at higher rates, for reasons that are not clear from this study. The financial burden alone is likely not enough to account for these differences, as these findings indicate that BIPOC are receiving grants, scholarships, and other aid at the same rates as White participants.

In addition, the reasons that BIPOC and White

participants reportedly chose dietetics as a major may highlight a related relevant issue. Black participants and oPOC more frequently reported choosing to major in nutrition 'to help my friends, family, or community become healthier' and less frequently reported to choose it because 'healthy eating is a personal passion' than White participants. Perspectives on career are heavily influenced by structural, race-related barriers that limit career paths for BIPOC and individuals' own self-efficacy related to career development and decision making (Prilleltensky 1997; Lent, Brown, and Hackett 2002). In essence, individuals form career goals based on their racial/ethnic and cultural backgrounds (among other demographic factors), self-efficacy and outcome expectations related to perceived job availability and perceived barriers. Structural racism may impact each of these variables and the relationships between them. If dietetics students of different races/ethnicities have disparate access to jobs and perceive differences in their ability to succeed, their opportunities to succeed are different.

That race/ethnicity predicted participants' scores on the TOCAR scale indicates that there is a difference in how BIPOC participants and White participants experience their campus communities. That BIPOC had lower TOCAR scores indicates they do not feel as supported by or connected to their academic (DPD/DI) communities, which has been found in other dietetics-specific research (Jennifer L. Warren 2017). This may be related, in part, to a growing body of literature documenting racial bias and microaggressions on university campuses (Huber and Solorzano 2015). Moreover, students at university campuses located in the southern US may be subject to more overt forms of racism, persisting from the longstanding historical disenfranchisement of BIPOC (Walker-DeVose et al. 2019). Conversely, BIPOC students may experience a better racial climate at Historically Black Colleges and Universities or at Minority-Serving Institutions, which could have a positive impact on the TOCAR scores in this study. In the current study, the type of institution attended was not measured and thus not controlled for. Perceived and actual discrimination may make it more difficult for students of color to engage with their White peers, faculty, or in academic communities generally and affects students' educational experiences (Gusa 2010).

That institutionalized racism has been downplayed in research in higher education settings (Harper 2012), it should be carefully studied and considered when racial/

ethnic disparities exist. The effect of racism (including perceived racism) on mental and physical health, including stress, has been well-established (Paradies et al. 2015; Anderson 2013). Coupled with fewer economic resources and other social stressors, an intersectional approach to understanding the persistence of dietetics students of color is warranted. Not only does the intersectionality of different identities lead to greater stress itself (Griffith, Ellis, and Allen 2013), the coping mechanisms that college students employ to manage stress may negatively affect their academic success (Ingram and Wallace 2019).

Limitations

Most participants of this survey are current students, enrolled in a DI, or RDNs - persons clearly persisting on the path to becoming or who have become RDNs. In order to determine the degree to which different academic or opportunity gap factors affect persistence, a different sample (e.g., those who drop out of the DPD, who do not apply for the DI, and who do not sit for the RDN exam) is needed. The sampling strategy for this study attempted to do so by asking DPD and DI program directors to send the survey to former students or interns, but the sample obtained is under-representative of people who did not persist. Moreover, the sample obtained are persons who are still connected with their current/former DPD or DI programs, indicating that they're still reading emails related to their dietetics programs. Persons who have chosen a different career or pursued other routes may not be as connected.

In addition, the survey question about the types of personal aid received (e.g., SNAP, disability, Medicaid) did not have a 'select all that apply option' or an 'other' option. It is possible that people who receive some benefits are also receiving other benefits, which would not have been captured by this question. In order to better understand the complex and compounding financial burden, more detailed data is needed.

Conclusion

Findings from this study, the largest and most diverse of dietetic students, interns, and professionals, indicate that systemic racism and institutionalized racism impacts who enters the dietetics profession. Before students have entered higher education, systemic racism (e.g., housing policies like redlining or policies that limited wealth accumulation)(Guastaferrero 2020; Hanks, Solomon, and Weller 2018), impacts BIPOC students' ability to access

and afford accredited dietetics programs. Once enrolled, BIPOC students experience a worse racial climate on campuses and struggle more than White students to pay for their education and/or training (which may also be related to wealth accumulation). Ultimately, the results of this study suggest that racism is driving the racial/ethnic disparity between dietetics students who succeed and those who don't.

The onus of persistence and success in dietetics is not on individuals. It is important to be explicit that institutional racism persists in higher education and interprofessional organizations and is a barrier to diversity and inclusion initiatives (Delgado and Stefancic 2013). An approach to reducing race-related stress on college campuses is to acknowledge the experiences of students of color related to racism and oppression, facilitating safe and open discussions for students, and fostering better relationships between faculty and students (Ingram and Wallace 2019). Though the Academy of Nutrition and Dietetics and has recently revised its statement on diversity and inclusion, no changes have been made to better recruit and retain a more diverse population of RDNs (Russell 2019). In dietetics, particularly among accredited programs, this effort should be a multi-pronged approach supported by the Academy and by institutions of higher education themselves. It is also important that the Academy and other dietetics accrediting bodies assess proposed policy changes to determine if and how those changes may impact the recruitment and retainment of BIPOC individuals.

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