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Dietetic Workforce Capacity Assessment for Public Health Nutrition and Community Nutrition

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ABSTRACT

Worldwide, there is a continued rise in malnutrition and noncommunicable disease, along with rapidly changing dietary patterns, demographics, and climate and persistent economic inequality and instability. These trends have led to a national and global focus on nutrition-specific and nutrition-sensitive interventions to improve population health. A well-trained public health and community nutrition workforce is critical to manage and contribute to these efforts. The study describes the current public health and community nutrition workforce and factors influencing registered dietitian nutritionists (RDNs) to work in these settings and characterizes RDN preparedness, training, and competency in public health and community nutrition. The study was comprised of a cross-sectional, online survey of mostly US RDNs working in public health/community nutrition and semistructured telephone interviews with US-based and global public health and community nutrition experts. RStudio version 1.1.442 was used to manage and descriptively analyze survey data. Thematic analysis was conducted to evaluate expert interviews. Survey participants ($n = 316$) were primarily women (98%) and White (84%) with the RDN credential (91%) and advanced degrees (65%). Most reported that non-RDNs are performing nutrition-related duties at their organizations. Respondents generally rated themselves as better prepared to perform community nutrition vs public health functions. Interviews were conducted with 7 US-based experts and 5 international experts. Experts reported that non-RDNs often fill nutrition-related positions in public health, and RDNs should more actively pursue emerging public health opportunities. Experts suggested that RDNs are more desirable job candidates if they have advanced public health degrees or prior experience in public health or community nutrition and that dietetic training programs need to more rigorously incorporate public health training and experience. Significant opportunity exists to improve the preparedness and training of the current dietetic workforce to increase capacity and meet emerging needs in public health and community nutrition.

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Supplementary materials: [Figures 1 and 2](#) are available at www.jandonline.org.

THE FIELD OF PUBLIC HEALTH nutrition aims to promote optimal health of populations through the combined application of public health and nutrition principles and methods at the program, system, policy, or environment levels, and community nutrition uses individual- and interpersonal-level interventions focused on knowledge, attitudes, and behavior to improve health outcomes in individuals or small groups in the community setting.^{1,2} Worldwide, the public health and community nutrition workforce must address primary, secondary, and tertiary prevention for a wide range of prevalent, complex health concerns

linked to both under- and overnutrition, such as poor maternal and child health, micronutrient deficiencies, obesity, type 2 diabetes, chronic kidney disease, cancer, and cardiovascular diseases.³⁻⁵

Management of these public health concerns is complicated by rapidly shifting context. Much of the world is experiencing a significant nutrition transition, defined as shifts in diet and physical activity patterns toward those associated with noncommunicable diseases.⁶ Demographic trends indicate that the proportion of the world population over the age of 60 will double from 11% now to 22% by 2050.⁷ There is substantial global instability with forced displacement, environmental degradation, climate change, and persistent economic disparities within and across countries threatening to reverse recent public health gains.^{8,9} Health care worker shortages are widespread, especially in rural and underresourced areas.¹⁰ The

coronavirus disease 2019 (COVID-19) pandemic has highlighted numerous existing challenges related to capacity and preparedness in public health and health care systems worldwide.¹¹ In the United States, it has focused attention on stark racial and ethnic health disparities that are the result of persistent social marginalization, weathering, institutional racism, disproportionate exposure to environmental hazards and economic inequality, disproportionate burden of chronic disease, and barriers to accessing health care.¹²⁻¹⁷ The COVID-19 pandemic has also catalyzed an economic crisis that may have catastrophic implications for food security in many parts of the world.¹⁸⁻²¹ All of these trends will likely result in increased need for nutrition-specific and nutrition-sensitive interventions across sectors.^{22,23}

Recognition of the need to increase the focus on nutrition is reflected in recent national and global health goals and strategies. For example, the US

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Agency for International Development launched its Multi-Sectoral Nutrition Strategy for 2014-2025, aiming to increase utilization of high-quality nutrition services and improve country capacity and commitment to nutrition.²⁴ The 2020 Global Nutrition Report emphasized the importance of nutrition as a key component of primary health care.²⁵ The US Healthy People 2020 goals²⁶ and the United Nations Sustainable Development Goals²⁷ also emphasize nutrition-related objectives.

A well-trained public health and community nutrition workforce is critical to effectively manage and deliver nutrition-specific and nutrition-sensitive interventions that address population health goals and objectives. However, little is known about the current capacity and preparedness of registered dietitian nutritionists (RDNs) in the public health and community nutrition workforces, in the United States and globally. This study aimed to describe the current workforce in public health and community nutrition settings and factors influencing RDNs to work in these settings and to characterize RDN preparedness, training, and competency in public health and community nutrition. Another objective of this study was to summarize global perspectives on workforce capacity in public health and community nutrition. To that end, the Academy's Nutrition Research Network worked with a panel of Academy experts and stakeholders to develop and conduct a survey and interviews.

SURVEY

Study Design

This study used a cross-sectional, anonymous, online survey of primarily US RDNs working in public health nutrition or community nutrition and semi-structured telephone interviews with US and global public health and community nutrition experts. The study protocol was approved by the American Academy of Family Physicians Institutional Review Board, and all participants provided informed consent.

Online Survey Design

Twenty-two survey questions were developed based on the primary aims of the study by the principal

investigator (T.Y.E.-K.) and then jointly reviewed and revised by an advisory panel (including M.B., S.R., J.V., J.Y., and E.Y.J.). The panel included Academy of Nutrition and Dietetics (Academy) Dietetic Practice Group and committee leaders with expertise in public health and community nutrition. The survey was written in English and included demographic questions, such as highest completed degree, number of years of experience in the public health or community nutrition field, and educational background and credentials of those performing nutrition-related duties in their employment settings. The survey then asked respondents to rate whether specific factors influenced them to work in the field. These factors included both barriers (ie, a broad spectrum of roles and education background are required and often fulfilled by other disciplines) and facilitators (ie, salary and advancement opportunities). Participants were also asked the extent to which their education and experience prepared them for their current roles. Specifically, they were asked about the contributions of undergraduate education; graduate education; internship programs; on-the-job training; regular supervision and performance appraisal; short courses, workshops, and conferences; professional development opportunities; and additional certifications in preparing them for their current public health or community nutrition position. Participants were also asked to report on public health and community nutrition functions (as defined by the Academy of Nutrition and Dietetics¹) that they are asked to perform, usually perform, or are trained to perform in their current positions and the extent to which they can apply foundational public health skills based on the domains of the Core Competencies for Public Health Professionals²⁸ in performing job functions, self-rating as proficient (highest level of expertise), knowledgeable, aware, or having little to no knowledge (lowest level of expertise). Final survey questions are available in [Figure 1](#) (available at www.jandonline.org).

Survey Recruitment

The survey was delivered using SurveyMonkey (SurveyMonkey Inc, San Mateo, CA), an online survey platform.

An invitation to participate in the survey was e-mailed to a convenience sample that included members of the Academy's Hunger and Environmental Nutrition Dietetic Practice Group, Nutrition Education for the Public Dietetic Practice Group, Public Health/Community Nutrition Dietetic Practice Group, and Dietetics Practice Based Research Network (now the Nutrition Research Network), and a 10% random sample of all Academy members, totaling approximately 11,600 potential recipients after duplicates were removed. The DPGs selected for sampling were those that were likely to capture individuals working in public health. The survey was open for 3 weeks from April 21, 2017, to May 12, 2017. A reminder e-mail was sent to all potential participants 2 weeks after the initial invitation.

The survey had a 6% response rate (691 of 11,600 potential respondents). Of the 691 responses, 511 participants were eligible because they indicated that they worked in a paid position in public health nutrition or community nutrition, and 316 completed all survey questions and were included in analyses. All but 3 of the respondents were from the United States. Eligible participants had the option to enter a raffle to receive 1 of 3 \$100 American Express gift cards. Raffle entries were kept separate from survey responses to ensure participants' anonymity.

Survey Analysis

Survey data were managed and descriptively analyzed in RStudio version 1.1.442 (RStudio Team, 2016; <http://www.rstudio.com/>) and Stata 15 (StataCorp LLC, College Station, TX). Response frequencies were calculated for Likert scale questions. For some analysis, types of education or experience that could prepare individuals for public health nutrition and community nutrition work were recoded to helpful ("strongly agree" and "agree" responses) or not helpful ("neither agree nor disagree," "disagree," or "strongly disagree" responses), and self-rated ability to apply foundational public health skills were recoded to group "proficient" and "knowledgeable" ratings compared with "aware" or "having little to no knowledge ratings." Relationships between whether types of education or experience that could

prepare individuals for public health nutrition and community nutrition work were helpful and self-reported perception of being trained to perform public health nutrition and community nutrition functions, and self-rated proficiency in public health competencies, were assessed using χ^2 and Fisher exact tests, as appropriate.

EXPERT INTERVIEWS

Semistructured Interview Question Development

Ten interview questions were developed based upon the primary aims of the study by the principal investigator (T.Y.E.-K.), then jointly reviewed and revised by the advisory panel (including M.B., S.R., J.V., J.Y., and E.Y.J.). The final semistructured interview guide is shown in [Figure 2](#) (available at www.jandonline.org).

Interview Recruitment

Experts are defined as nutrition and dietetics professionals with the highest degree of skill and knowledge in nutrition and dietetics.²⁹ For the purposes of this study, experts were defined as those with a mastery of public health nutrition and/or community nutrition skills or knowledge, which included individuals with or without the RDN credential. Non-RDNs were included in the US context because senior public health and community nutrition positions may be held by non-RDNs. Non-RDNs were included in a global context due to variation in professional credentialing by region. The expert panel identified 28 US-based and 22 global experts in a variety of employment settings. Next, purposive sampling was used to select 10 US-based and 10 global RDNs representing various employment settings. They were recruited for interview participation via e-mail from May 1, 2017, to August 31, 2017. Within 3 weeks of the initial e-mail, reminder e-mails were sent to those who did not respond to the initial invitation. If the recruited RDN did not wish to participate, an alternate RDN was chosen from the equivalent employment setting grouping and asked to participate in the study. Of the 31 experts in public health nutrition or community nutrition contacted, 12 (39%) agreed to participate. Nineteen did not respond.

All interviews were completed by T.Y.E.-K. and K.K. using a standardized script, which was written and administered in English. Approximately 24 hours in advance of the interview, the interviewer e-mailed the interview guide to the participant. Interviews were conducted via telephone for approximately 30 to 60 minutes. Participants were asked the 10 scripted questions. Follow-up probing or clarifying questions were asked as needed. Interviews were audio-recorded and manually transcribed by K.K. and T.Y.E.-K. US-based experts who completed the interview received \$50 in compensation and experts outside the United States received an electronic Academy Evidence Analysis Library Toolkit on a topic of their choice.

Thematic Analysis

Thematic analysis was conducted to identify patterns, similarities, and

differences between expert experiences and opinions. T.Y.E.-K. and K.K. manually coded US and global interview transcripts independently, identified emergent themes, and then collaborated to create a finalized codebook and themes. Themes were reviewed by E.Y.J.

FINDINGS

Survey Participant Characteristics

Most survey respondents ($n = 316$) were women (98%), White (84%), RDNs (91%) working full-time (81%) in public health or community nutrition. Close to two-thirds (65%) of participants had a master's degree or higher level of education and 56% had 6 or more years of experience in public health or community nutrition. Additional participant characteristics are provided in [Table 1](#).

Table 1. Demographic characteristics of registered dietitian nutritionists (RDNs) that responded to a cross-sectional, anonymous, online survey of individuals working in a paid position in public health and community nutrition ($n = 316$) and U.S. and global public health and community nutrition experts that participated in semi-structured interviews ($n = 12$)

Characteristics	Online survey participants, n (%)	Interview participants, n (%)
	←————— n (%) —————→	
Sex		
Female	308 (97.5)	11 (91.7)
Male	8 (2.5)	1 (8.3)
Race/ethnicity		
White	265 (83.9)	7 (58.3)
Hispanic or Latinx	16 (5.1)	2 (16.7)
Black or African American	13 (4.1)	1 (8.3)
Asian	12 (3.8)	0
Multiple	8 (2.5)	0
American Indian/Alaskan Native	1 (0.3)	0
Choose not to answer	1 (0.3)	0
Other	0	2 (16.7)
Highest degree completed		
Currently a student	1 (0.3)	0
Associate's	1 (0.3)	0
Baccalaureate	110 (34.8)	0
Master's	183 (57.9)	7 (58.3)

(continued on next page)

Table 1. Demographic characteristics of registered dietitian nutritionists (RDNs) that responded to a cross-sectional, anonymous, online survey of individuals working in a paid position in public health and community nutrition (n = 316) and U.S. and global public health and community nutrition experts that participated in semi-structured interviews (n = 12) (continued)

Characteristics	Online survey participants, n (%)	Interview participants, n (%)
Doctorate	20 (6.3)	4 (33.3)
Professional (eg, MD, JD)	1 (0.3)	1 (8.3)
Employment status		
Full-time (≥ 30 h/wk)	256 (81.0)	12 (100.0)
Part-time (< 30 h/wk)	60 (19.0)	0
Years of practice in public health nutrition/community nutrition		
<5	140 (44.3)	0
6-10	58 (18.4)	1 (8.3)
11-25	72 (22.8)	6 (50.0)
>25	46 (14.6)	5 (41.7)
Academy membership status		
Member	305 (96.5)	7 (58.3)
Nonmember	11 (3.5)	5 (41.7)
RDN^a credential status		
Has RDN credential	288 (91.1)	7 (58.3)
Does not have RDN credential	28 (8.9)	5 (41.7)
Employment setting		
Community public health	42 (13.3)	0
Local department of public health	37 (11.7)	0
State department of public health	31 (9.8)	0
College/university faculty	26 (8.2)	5 (41.7)
Clinic or ambulatory care	21 (6.6)	0
Hospital health center	19 (6.0)	0
Charitable organization	16 (5.1)	0
School food service	16 (5.1)	0
Self-employed (individual)	11 (3.5)	4 (33.3)
Federal agency	9 (2.8)	1 (8.3)
Other ^b	88 (27.8)	4 (33.3)

^aRDN = registered dietitian nutritionist.

^bOther employment settings include government settings (outside of public health departments), domestic nonprofits, extended-care facilities, research centers, self-employed (organizations), college/university food service, health maintenance organizations, home health care primaries, international nonprofits, religious organizations, and self-employed (health care).

Survey Results

Most participants (62%) reported that the RDN credential was a required qualification for their current positions. However, about the same percentage of respondents (64%) also reported that non-RDNs, such as public health

professionals (34%), Special Supplemental Nutrition Program for Women, Infants, and Children nutritionists (29%), nurses (26%), and community health workers (21%), are performing nutrition-related duties in their employment settings. Many participants also reported that colleagues

with bachelor's degrees in nutrition, dietetics, or other health-related fields are performing nutrition-related duties in public health and community nutrition employment settings. Several participants commented in a final, free-text question that many individuals working in public health and community nutrition do not pursue the RDN credential because it is too expensive, time-intensive, and/or clinically focused.

Participants were asked to self-report the degree to which 6 factors impacted their decision to work in public health nutrition or community nutrition (Table 2). The barrier with the highest reported impact was that a broad spectrum of roles and educational backgrounds are required and often fulfilled by other disciplines. Many participants also reported that an "other" factor positively impacted their decision to work in the field; most often, this "other" factor was a passion for public health or community nutrition. Additional factors cited in the "other" category included an interest in helping underserved populations, an ability to have an impact on health at the population level, and an interest in prevention. A few participants mentioned that job flexibility positively impacted them to work in the field. Many commented that salaries in the public health and community nutrition field are generally low, but this was not a strong deterrent.

Respondents were asked to assess the extent to which 8 factors related to education or experience prepared them to apply skills and perform work-related functions in public health nutrition and/or community nutrition. The majority of participants agreed or strongly agreed that all of the 8 factors prepared them: on-the-job training (92% of respondents agreed or strongly agreed); graduate education (among those with graduate degrees; 88%); access to professional development opportunities (88%); access to short courses, workshops, and conferences (88%); internship programs (80%); undergraduate education (73%); regular supervision linked with performance appraisal (62%), and access to additional certifications (61%). Thirty-nine participants reported that other factors prepared them, including past work experience as an RDN, networking with others in the field,

Table 2. Self-reported agreement with factors that impacted registered dietitian nutritionists (RDNs) that responded to a cross-sectional, anonymous, online survey to work in the public health and community nutrition field

Factors	n	Strongly	Neither agree	Disagree	Strongly disagree
		agree	nor disagree		
←————— n (%) —————→					
Barriers					
Limited roles for public health and community nutrition job positions	316	22 (6.9)	66 (20.8)	93 (29.3)	41 (12.9)
Variability in position titles and confusion with regards to what roles go with which titles	316	19 (6.0)	59 (18.6)	126 (39.8)	39 (12.3)
A broad spectrum of roles and educational background required and often fulfilled by other disciplines	316	45 (14.2)	122 (38.5)	86 (27.1)	18 (5.7)
Facilitators					
Salary and advancement opportunities	316	25 (7.9)	71 (22.4)	98 (30.9)	30 (9.5)
Leadership support for recruitment	316	26 (8.2)	83 (26.2)	123 (38.8)	26 (8.2)
Access to continuing education opportunities	316	30 (9.5)	111 (35.0)	93 (29.3)	18 (5.7)

^aSome respondents (n = 111) wrote in free-text responses to describe other factors that were not listed. These responses most commonly included a passion for public health and community nutrition as a facilitator affecting their decision to work in the field.

and mentorship (being a mentor or a mentee).

Participants were asked to indicate if they are asked to perform or usually perform or are trained to perform 11 public health nutrition functions (Table 3) and 5 community nutrition functions (Table 4) in their current positions. On average, a higher percentage of respondents reported that they are trained to perform the 5 community nutrition functions (77%) than the 11 public health nutrition functions (63%). Correspondingly, on average, more respondents usually perform community nutrition functions (64%) than public health nutrition functions (57%) in their current positions.

Some relationships between respondents indicated that a factor related to education or experience was helpful in preparing them to work in public health or community nutrition, and respondents indicated that they were trained to perform some community nutrition or public health nutrition functions. This was most frequently observed for graduate education, with individuals that reported that their graduate education helped to prepare them more likely to report that they were trained in several public health nutrition functions related to food and nutrition care access (82%

trained if graduate education prepared them vs 48% trained if graduate education did not prepare them; $P < .001$); taking on leadership roles (86% vs 44%; $P < .001$); policy development and evaluation (70% vs 30%; $P < .001$); health promotion and disease prevention (81% vs 63%; $P = .03$); program management and administration (71% vs 48%; $P = .02$); research, evaluation, and demonstration projects (76% vs 42%; $P = .002$); using population-level data (71% vs 37%; $P < .001$); and the community nutrition function related to prevention interventions (83% vs 59%; $P = .004$). Respondents who indicated that their internship helped to prepare them were more likely to report that they were trained in public health nutrition functions related to taking on a leadership role (79% vs 63%; $P = .008$), food and nutrition care access (78% vs 61%; $P = .007$), and using population-level data (66% vs 48%; $P = .02$), and the community nutrition function related to referral and collaboration with local health organizations (80% vs 64%; $P = .01$).

Individuals that reported that their undergraduate education helped to prepare them were more likely to report that they were trained in the public health nutrition function related to food and nutrition care access (79% vs 67%; $P = .03$) and the community

nutrition functions related to nutrition education and counseling (93% vs 84%; $P = .01$) and referral and collaboration with local health organizations (80% vs 70%; $P = .05$). Individuals who felt that on-the-job training prepared them were more likely to report that they were trained in the public health function of taking on a leadership role (78% vs 58%; $P = .03$). Those who felt that short courses, workshops and conferences were helpful were more likely to report that they were trained in the public health function of budget preparation (62% vs 45%; $P = .05$). Those who felt access to additional certifications were helpful were more likely to report that they were trained in the community nutrition functions of nutrition education and counseling (93% vs 85%; $P = .04$) and referral and collaboration with local health organizations (82% vs 71%; $P = .03$). There were no significant relationships between other types of preparation and self-perceptions of being trained for specific public health nutrition and community nutrition functions.

Regarding application of foundational public health skills in their current job functions (Figure 3), participants rated their ability to apply communication skills the strongest, with almost everyone rating themselves as either proficient (56%) or

Table 3. Public health nutrition functions that registered dietitian nutritionists (RDNs) that responded to a cross-sectional, anonymous, online survey are asked to perform, usually perform, or are trained to perform in their current public health nutrition or community nutrition positions (n = 316)

Public health nutrition function	Are you asked to do it?	Do you usually do it?	Are you trained to do it?
	←————— n (%) —————→		
1. Assuring access to healthy and affordable food and nutrition-related care	216 (68.4)	229 (72.4)	241 (76.3)
2. Taking a leadership role in identifying nutrition-related needs of a community	212 (67.1)	223 (70.6)	241 (76.3)
3. Assessing, planning, directing, and evaluating health promotion and disease prevention efforts	207 (65.5)	218 (69.0)	233 (73.7)
4. Collaborating with others to promote environmental and systems changes	213 (67.4)	217 (68.6)	220 (69.6)
5. Administering and managing programs, including supervising personnel	193 (61.1)	197 (62.3)	210 (66.5)
6. Advocating for and participating in policy development and evaluation including identifying the impacts and outcome of these efforts	168 (53.2)	187 (59.2)	188 (59.5)
7. Participating in research, evaluation, and demonstration projects, including interpreting and applying research findings and successful interventions to public health and nutrition programs	142 (44.9)	155 (49.1)	196 (62.0)
8. Systematically collecting, analyzing, and interpreting data on population demographics, health and disease trends, and food consumption patterns	128 (40.5)	141 (44.6)	196 (62.0)
9. Providing technical assistance/consultation to policy makers, decision makers, and others within and outside of health agencies	145 (45.9)	147 (46.5)	167 (52.8)
10. Developing and/or assisting in budget preparation	153 (48.4)	140 (44.3)	146 (46.2)
11. Identifying and seeking resources (eg, grants, contracts) to support programs and services	116 (36.7)	133 (42.1)	136 (43.0)

knowledgeable (40%). The majority also rated themselves as proficient or knowledgeable in cultural competency (35% proficient and 53% knowledgeable) and analytical/assessment skills (32% proficient and 48% knowledgeable). Participants reported that they were the least knowledgeable in financial planning and management, with 52% stating that they had either limited or no knowledge of the skill. There were some relationships between reporting that a factor related to education or experience had prepared them and their self-reported ability to apply public health skills. Respondents were more likely to report that they were knowledgeable or proficient in leadership and systems thinking if regular supervision linked with performance appraisal had prepared them (78% knowledgeable or proficient) vs not prepared them (66%; $P = .02$). Similar associations were noted

between graduate education and policy development and program planning skills (75% knowledgeable or proficient if it was a factor vs 56% if it was not, respectively; $P = .05$) and public health sciences (79% vs 63%; $P = .04$). Almost all (98%) of respondents that felt the internship had prepared them indicated that they were knowledgeable or proficient in communication, compared with 88% of those that did not feel prepared by the internship ($P = .002$). There were no significant relationships between other types of preparation and levels of self-reported proficiency in public health skills.

Expert Interview Participant Characteristics

Semistructured interviews were conducted with 7 US-based experts and 5 global experts. Of the 7 US-based experts, 2 were college/university faculty,

2 worked for nonprofit organizations, 1 was self-employed as a consultant, 1 was employed by a federal agency, and 1 was employed by a nonprofit organization and self-employed as a consultant. Among the global experts, 2 were employed by colleges/universities as well as international nongovernmental organizations, 1 was college/university faculty, 1 was employed by a nonprofit organization, and 1 was self-employed as a consultant. Global experts had public health and/or community nutrition experience in countries including Lebanon, Syria, Jordan, Venezuela, Ethiopia, and Senegal. Additional details about interview participant characteristics are provided in [Table 1](#).

Expert Interview Results

Thematic analysis of the interviews revealed several themes that applied to

Table 4. Community nutrition functions that registered dietitian nutritionists (RDNs) that responded to a cross-sectional, anonymous, online survey are asked to perform, usually perform, or are trained to perform in their current public health nutrition or community nutrition positions (n = 316)

Community nutrition function	Are you asked to do it?	Do you usually do it?	Are you trained to do it?
	←————— n (%) —————→		
1. Developing, providing, and evaluating nutrition education and counseling efforts for small groups and individuals	248 (78.5)	240 (75.9)	286 (90.5)
2. Planning, implementing, and evaluating primary and secondary prevention interventions based on community assessment data and scientific evidence	181 (57.3)	182 (57.6)	234 (74.1)
3. Developing nutrition programs and interventions, including related educational materials and in-service education programs, that meet the cultural and linguistic needs of individuals and target populations	241 (76.3)	243 (76.9)	271 (85.8)
4. Providing referrals to and collaborating with local health organizations to ensure comprehensive nutrition services	193 (61.1)	200 (63.3)	244 (77.2)
5. Administering programs and supervising staff; participating in care coordination or providing case management	141 (44.6)	140 (44.3)	183 (57.9)

both global and US-based interviews. Themes and example quotes are listed in [Figure 4](#).

IMPLICATIONS

RDNs have significant capacity to bring valuable expertise and transferable skills to multidisciplinary teams addressing public health nutrition and community nutrition issues,³⁰ but based on the opinions of the experts that were interviewed for this study,

public health nutrition education and training programs for RDNs are currently perceived to be inadequate in the United States and globally, with disparities in geographic capacity, preparedness, and leadership. Based on the survey conducted as part of this study, US RDNs who are currently working in the field reported that their skill sets were primarily gained through on-the-job training, graduate degrees, and professional

development. In some cases, when a wider variety of education and experience options were rated by the RDN as helpful, they were associated with more frequently feeling trained and proficient in certain public health and community nutrition skills and competencies, indicating that in some cases the relevance of the content is likely as important as modality and timing. Overall, US RDNs that participated in the survey are most comfortable with

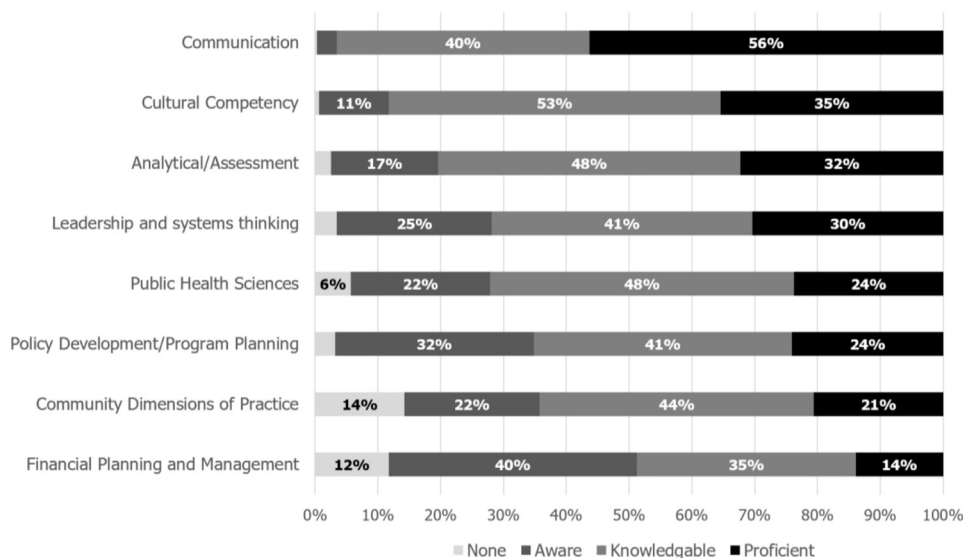


Figure 3. Survey participants' self-rated ability to apply the Public Health Core Competencies.²⁸

Theme description	Theme summary	Example quotation(s)
RDNs have significant capacity to have roles in public health and community nutrition fields.	RDNs should have roles in both clinical and public health and community nutrition settings.	<p>“When there’s so much nutrition information out there and so many people who [aren’t] experts, RD(N)s can cut through the clutter and really . . . bring a very credible voice to the [public health nutrition] space.” (US-based expert)</p> <p>“We need to address public health in a multidisciplinary way. . . . For having that holistic view, you have to include several professionals and definitely dietitians should be one of those.” (Global expert)</p>
The skill sets required to work in public health nutrition and/or community nutrition extend beyond current RDN training and education.	<p>Many of the skills required to succeed in public health and community nutrition extend, in some cases, beyond those typically acquired in current RDN education and training. Specifically, participants mentioned these additional skills: knowledge of biostatistics and epidemiology, data analysis, awareness of social determinants of health, understanding community needs, grant writing, budget and resource management, personnel management, and in some cases, speaking multiple languages. Currently, public health professionals are generally more prepared to perform this broad range of skills than the RDN.</p>	<p>“We would rather hire somebody without the RDN that has population-based skills than hire somebody with the RDN that doesn’t understand population health.” (US-based expert)</p> <p>“We are living in a very difficult time in [my country], and . . . how to make decisions of what to do with those resources, it’s very hard sometimes.” (Global expert)</p>
The current education model for RDNs needs increased emphasis on public health and community nutrition for RDNs to enter this area of practice.	<p>Nutrition and dietetics programs should increase emphasis on public health and community nutrition. US-based experts suggested that the Academy has a role in catalyzing this change in several ways: by developing relationships with public health nutrition organizations and by rethinking the current RDN education and training model in terms of the public health experience. One participant believed that the existing dietetics programs in the United States adequately prepare dietitians to work in community nutrition by fostering individual and small-group counseling skills but noted that public health nutrition skills are not rigorously cultivated.</p>	<p>“In terms of public health nutrition—that’s the field I know best—health departments really struggle to get people with the combination of the strong nutrition training and the public health training.” (US-based expert)</p> <p>“In our public health nutrition graduate program, probably about a quarter to maybe a third of our faculty are RDNs. That is a preference, but it’s hard to find people with public health nutrition-specific training and the RDN [credential] at the doctoral level.” (US-based expert)</p>

*(continued on next page)***Figure 4.** Description of the 7 themes and corresponding example quotations from global and US-based expert interviews.

Theme description	Theme summary	Example quotation(s)
Advanced degrees, and specifically the MPH degree, are desirable qualifications for public health and community nutrition positions.	Many experts, both in the United States and globally, emphasized the value of advanced degrees in obtaining their current roles in their organizations and preparing them for their work in public health nutrition. Several experts commented that their organizations hire for public health nutrition positions based on public health degrees and not the RDN credential. One participant commented that she had no formal training in public health nutrition; instead, she fostered her public health skills by learning from colleagues on the job. However, this experience was the exception rather than the rule among the interviewed experts.	“We would only hire an RDN . . . if they already had an MPH degree. We generally don’t hire people with an MS degree because we don’t need the science; we need the population-specific skills.” (US-based expert)
Field experience, public health internships, and diverse prior work experience prepare experts to work in public health and community nutrition.	Experts stated that their field experience and public health internships prepared them for their current positions in public health nutrition or community nutrition. Pursuing internship opportunities related to public health nutrition allowed them to foster public health skills, and these opportunities even encouraged some participants to pursue additional education related to public health.	“I obtained my master’s and then my PhD, but I did do a couple of internships. Even in my undergraduate years, I worked as a research assistant in Lebanon, and then during my master’s I did [an] internship in Senegal. I also worked for a couple of months here in Washington for a global nutrition consultancy. . . . If I didn’t have those experiences, I don’t know if I would’ve been such an attractive candidate for my current position [at an international nonprofit organization].” (Global expert)
Employers and RDNs currently working in public health and community nutrition should come together to identify ways to recruit more RDNs into these settings.	Several experts suggested that collaboration among RDNs and key players in public health and community nutrition will support more RDNs moving into these settings. For example, one expert suggested that federal agencies in the United States need to convene around this issue. Another suggested that RDNs in public health nutrition could advocate for other RDNs entering the field.	“I wonder if there’s some strength in bringing together [RDNs] that are already in public health . . . to dialogue about what they can do in their jobs and helping. Maybe there’s some tools they need, some education, some mentoring, to feel like they can do more promotion of that in their workplaces.” (US-based expert)
Non-RDNs, specifically, public health professionals, are filling nutrition-related positions in public health and community nutrition, and RDNs need to actively seek out emerging and	RDNs need to seek out positions in public health nutrition and community nutrition, and especially in emerging and high-profile areas, more assertively.	“I see a lot of people that are passionate about food, passionate about gardening, passionate about good eating and stuff like that, that are in schools or in communities, none of [whom] have a background in nutrition. They’re great communicators, they’re great promoters . . .

(continued on next page)

Figure 4. (continued) Description of the 7 themes and corresponding example quotations from global and US-based expert interviews.

Theme description	Theme summary	Example quotation(s)
high-profile opportunities in these fields.		<p>but they're not [RDNs]. And it's not because those jobs are reserved, it's just that I don't think [RDNs] think out of the box." (US-based expert)</p> <p>"Currently, we know that people—not necessarily with nutrition degrees—are making decisions about nutrition in ministries, agriculture . . . UNICEF, or public health offices." (Global expert)</p> <p>"We have a lot of opportunities to impact the public's health through different types of public health and community-based programs, especially with the trend in wellness. So, we need to be aggressive in positioning ourselves in some of these places, in doing the work, in doing it well, and in being highly visible." (US-based expert)</p>
MPH = Master of Public Health; RDN = registered dietitian nutritionist; UNICEF = The United Nations Children's Fund.		

Figure 4. (continued) Description of the 7 themes and corresponding example quotations from global and US-based expert interviews.

utilizing skills that overlap substantially with current dietetics training (eg, communication, cultural competency, and assessment), and less comfortable with skills that are potentially integral to taking on leadership roles in public health (eg, policy development/program planning, community dimension of practice, and financial planning and management). As a result of addressable gaps in education and training, too few nutrition professionals with the appropriate public health skill set are likely available to respond to increasing public health and community nutrition market needs, domestically and globally.³¹ Based on the results of both the survey and the interviews, public health and community nutrition positions are currently being filled by other professionals, and particularly by public health professionals. This reflects findings from other assessments of the dietetic workforce in the United States, with just 9% of RDNs responding to the Academy's 2019 Compensation and Benefits Survey report that the practice area of their primary position is community nutrition, encompassing RDNs working in the Special Supplemental Nutrition Program for Women, Infants and Children, public health, cooperative extension, and school, childcare,

and food bank and assistance program settings.³²

Implications for Practice

Capacity-building education and training must be implemented with institutional support to be effectively sustained.³³ Therefore, the Academy has an important role in advocating for RDNs to enter the public health nutrition and community nutrition workforce. Although public health nutrition workforce competency expectations vary by employment setting,³⁴ public health and community nutrition workforce capacity development should begin with dietetics training and education. Although several individual academic programs in the United States offer domestic and overseas internship experiences and programs in the areas of public health and community nutrition, the Academy can consider adjusting educational and internship requirements to promote a comprehensive focus on important aspects of domestic and global public health and community nutrition for all programs. The Didactic Program in Dietetics curricula should be reviewed and updated to increase focus on building RDN competency in key public health skills and exposing RDNs to important domestic and global public

health nutrition concepts, such as social determinants of health, institutionalized racism and related health inequities, population-level prevention and interventions, protracted crises, and emergency nutrition. Recently, the Academy released population-level nutrition intervention terms as a part of the electronic Nutrition Care Process Terminology. In addition to providing standardized terminology to practitioners, this can facilitate exposure to population-level concepts during dietetics education.³⁵ The Commission on Dietetic Registration may consider reviewing and increasing the proportion of RDN examination questions related to public health nutrition and community nutrition to drive more focus in this area of practice. Employers' perception of the value of RDNs in public health settings may improve if population-level skills are introduced as a standard, substantive component of curricula for prospective RDNs.

The new initiative to increase the minimum degree requirement for RDN registration eligibility from a baccalaureate to a graduate degree in January 2024³⁶ may have a positive impact on workforce capacity in public health and community nutrition due to an expected increase in practitioners

with more advanced skill sets. However, some online survey respondents reported that the existing requirements to become an RDN are already too time-intensive and costly without the addition of the graduate degree requirement, necessitating careful monitoring of the impact that the new requirement has on the percentage of RDNs working in public health and community nutrition and on the racial and ethnic diversity of the RDN workforce, as this has important implications for providing and promoting equitable care³⁷ and health outcomes. If the new minimum degree requirement has adverse effects, the Academy needs to actively consider increasing access to the profession via alternative pathways.

The Academy can also offer additional opportunities for RDNs to expand their public health and community nutrition skill set through professional development, particularly for emerging areas. One initiative in this area is the Academy Foundation's efforts to offer fellowship opportunities that aim to improve fellow expertise and networking opportunities while addressing domestic and global public health and community nutrition challenges. The Academy's Foundation provides details about the fellowship model, as well as current and past fellows' projects via their website: <https://eatrightfoundation.org/scholarships-funding/fellowships/>.

Another role for the Academy is continued support of the Public Health/Community Nutrition Practice Group, which develops professional development tools and resources for current RDNs, such as the Public Health Nutrition Certificate of Training program and the Guide for Developing and Enhancing Skills in Public Health and Community Nutrition, which was developed in collaboration with the Association of State Public Health Nutritionists and is available in 3 different versions for practitioners, employers and administrators, and educators and preceptors.³⁸ RDNs can also utilize the Academy's Standards of Practice and Standards of Professional Practice, which aim to help public health and community nutrition RDNs assess their skills and identify opportunities for professional development.³ Member engagement in the Academy's mentoring program with professionals

working in public health and community settings is essential to support public health nutrition competency and workforce development.³⁹ The Academy's continued support of leadership development opportunities for RDNs in public health and community nutrition is also important,⁴⁰ as leaders and agents of change were identified as a key enabler of public health workforce development in a qualitative study conducted across 7 European countries.⁴¹ Additionally, fostering active collaborations with Academy Member Interest Groups and organizations such as Diversify Dietetics⁴² is important to strengthen Academy resources and initiatives related to health equity, racial and ethnic diversity of the RDN workforce in all practice settings, and cultural competence and humility.⁴³ Interviewees also suggested that the Academy work to establish or expand relationships with other key organizations in public health, such as the American Public Health Association, the Association of State Public Health Nutritionists, the World Health Organization, and the World Federation of Public Health Associations, and consider public health nutrition perspectives and complexity when establishing policy positions and making public statements.

Finally, it is necessary for the Academy to support efforts to estimate the supply and demand for public health and community nutrition professionals within public health and other related sectors, to create the business case for improving the capacity to train more individuals in this practice area, domestically and globally, and to identify key areas where additional training options and capacity building are necessary. Additional data are needed to establish robust profiles of the public health and community nutrition workforces in the United States at the national and state levels and at the country level worldwide. Global estimates that do exist are in some cases outdated and have been conducted for very few countries, such as Indonesia⁴⁴ and Canada.⁴⁵ Ideally, these types of data about public health and community nutrition workforce capacity would be captured through routine surveillance via established data collection efforts to allow for careful, ongoing monitoring of the need for capacity-building efforts.

Strengths and Limitations

A major strength of this study is the use of expert interviews in addition to the online survey, which allowed for a more comprehensive perspective than either method used alone. The inclusion of perspectives of both United States and global experts is also a strength. The scope of the interview component of the study was a limiting factor, because it did not allow for comprehensive analysis of public health and community nutrition workforce capacity across all countries. Another limitation is that the survey was not validated. In addition, participants' ability to apply skills was self-rated and may be subject to respondents' perceptions and social desirability bias. Additionally, the respondents who volunteered to participate in the study do not represent all RDNs or nutrition professionals who work in public health nutrition/community nutrition, given the low response rates for the survey and interviews, the recruitment methods, and the fact that most survey respondents were White, female Academy members. Finally, as these surveys and interviews were conducted a few years ago, it is possible that the public health and community nutrition workforce landscape has shifted in the interim; regular monitoring of the need for capacity building efforts is necessary.

CONCLUSION

Significant opportunity exists among key players in community and public health nutrition, including the Academy, to advocate for RDNs in the field and to improve training of the current dietetic workforce to increase capacity and support scaling up effective nutrition-specific and nutrition-sensitive interventions to improve population health.^{46,47} Specifically, the Academy can consider adjusting education and internship requirements to support a more comprehensive focus on public health and community nutrition topics and skills; monitoring the impact of the new graduate degree requirement on the racial and ethnic diversity of the dietetic workforce and the percentage of RDNs that pursue public health and community nutrition careers; continuing to support fellowship and professional development

opportunities in public health and community nutrition; partnering with DPGs, Member Interest Groups, and external public health organizations to strengthen capacity, resources, and actions around important public health and community nutrition topics; and supporting accurate and ongoing estimates of RDN workforce supply and demand in public health and community nutrition, which are urgently needed to guide and justify capacity building efforts, including information about workforce training opportunities and challenges, workforce demographics, remuneration, skill mix and emerging opportunities.⁴⁷

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AUTHOR CONTRIBUTIONS

T. Y. El-Kour, M. Bruening, S. Robson, J. Vogelzang, J. Yang, and E. Y. Jimenez contributed to the development of the survey and interview questions. T. Y. El-Kour and K. Kelley conducted and coded interviews. T. Y. El-Kour, K. Kelley, and E. Y. Jimenez completed the data analysis and drafted the initial manuscript. All authors contributed to the data interpretation and reviewed and revised the manuscript.

Qualification Page

This survey is designed to get feedback from practitioners who work in a paid position in public health nutrition/ community nutrition.

According to the Academy of Nutrition and Dietetics Definition of Terms list, public health nutrition is defined as "the application of nutrition and public health principles to design programs, systems, policies and environments that aims to improve or maintain the optimal health of populations and targeted groups." "Community nutrition encompasses individual and interpersonal-level interventions that create changes in knowledge, attitudes, behavior and health outcomes among individuals, families or small, targeted groups within a community setting."

These definitions can be found at: www.eatrightpro.org/resources/practice/quality-management/scope-of-practice

* 1. Do you work in a paid position in public health nutrition/ community nutrition?

Yes

No

Figure 1. Self-rated ability of registered dietitian nutritionists (RDNs) working in a paid position in public health nutrition or community nutrition that responded to a cross-sectional, anonymous, online survey to apply the Public Health Core Competencies.

Consent to Participate in Research

This is a research survey being conducted by the Academy of Nutrition and Dietetics. Please read the following information carefully as you decide whether to participate in this research.

You are being asked to participate in a research study about workforce capacity in public health nutrition and community nutrition. Please read this form and ask us any questions that you may have before agreeing to participate.

Researchers at the Academy of Nutrition and Dietetics are conducting this survey.

Background Information:

The purpose of this study is to learn more about the current workforce in public health nutrition and community nutrition. The study aims to identify factors influencing Academy members to work in public health nutrition and community nutrition settings and to determine factors driving preparedness and training of Academy members.

Procedures:

Participants include members of the Academy of Nutrition and Dietetics who work in a paid position in public health nutrition and community nutrition.

If you agree to be a participant in this research, we would ask you to complete a questionnaire anonymously through SurveyMonkey. It should take you approximately 10-15 minutes in total to complete the questionnaire.

Risks and Benefits to Being in the Study:

Your participation in the study does not involve any physical or psychological risks to you.

If you do not wish to answer a question, you may skip it and go to the next question. You have the option to withdraw at any time.

There will be no direct benefit to you by your participation in this research study; however, your participation may help the researchers to better understand the current workforce in public health nutrition and community nutrition, as well as factors influencing Academy members to work in these areas and factors affecting preparedness and training.

Compensation:

At the conclusion of the survey, you may choose to enter a drawing for one of three \$100 American Express gift cards. Your name and email for the drawing will be stored separately to your other responses. The odds of winning will vary based on number of entries received.

Confidentiality:

The researchers will receive your responses anonymously. All data will be stored in a password protected electronic format and kept private. We will not have access to any information that will make it possible to identify you as a participant. Access to the data will be limited to the researchers, the Institutional Review Board responsible for protecting human participants, and regulatory agencies.

Voluntary Nature of the Study:

Your participation is voluntary. Choosing not to participate will not affect your current or future relationships with your employer or status within the Academy of Nutrition and Dietetics. There is no penalty or loss of benefits for not participating or for discontinuing your participation.

Figure 1. (continued) Final survey questions.

Contacts and Questions:

The researcher responsible for this study is Rosa Hand, MS, RDN, LD. If you have any questions, concerns or complaints about the study, you may contact her at rhand@eatright.org.

If we cannot be reached, or if you would like to talk to someone other than the researchers about: (1) questions, concerns or complaints regarding this study, (2) research participant rights, or (3) other human subjects issues, please contact the American Academy of Family Physicians' Institutional Review Board at (800) 2742337 or write: American Academy of Family Physicians, Jennifer Farris, IRB Assistant, 11400 Tomahawk Creek Parkway, Leawood, KS, 66211.

You may print a copy of this form for your records.

Statement of Consent:

I have read the above information. I have received answers to the questions I have asked. I am at least 18 years of age. By completing the questionnaire, I consent to participate in this research.

Figure 1. (continued) Final survey questions.

Demographic Information

2. What is your sex?

Female

Male

3. What is your race or ethnicity?

American Indian or Alaskan Native

Asian

Black or African American

Hispanic or Latino

Native Hawaiian Pacific Islander

White

4. Are you currently a member of the Academy of Nutrition and Dietetics?

Yes

No

5. What is your highest completed degree?

Associate's

Baccalaureate

Master's

Doctorate

Professional (MD, JD, etc)

None of the above (I am currently a student)

Figure 1. (continued) Final survey questions.

6. Please check all professional credentials you hold. Choose all that apply.

- DTR - Dietetic Technician Registered (CDR)
- RD(N) - Registered Dietitian (Nutritionist) (CDR)
- LD/LDN - State Licensed Dietitian
- CDN - State Certified Dietitian
- BCADM - Board Certified Advanced Diabetes Management
- CDE - Certified Diabetes Educator (National Certification Board for Diabetes Educators)
- CFSP - Certified Foodservice Professional (NAFEM)
- CLC - Certified Lactation Counselor
- CLE- Certified Lactation Educator
- CHES- Certified Health Education Specialist (CHES)
- CNSC - Certified Nutrition Support Clinician (ASPEN)
- CSG - Certified Specialist in Gerontological Nutrition (CDR)
- CSO - Certified Specialists in Oncology Nutrition (CDR)
- CSP - Certified Specialist in Pediatric Nutrition (CDR)
- CSR - Certified Specialist in Renal Nutrition (CDR)
- CSOWM- Certified Specialist in Obesity and Weight Management (CDR)
- CSSD - Certified Specialist in Sports Dietetics (CDR)
- CPH- Certified in Public Health
- FADA - Fellow of the American Dietetic Association (CDR)
- FAND - Fellow of the Academy of Nutrition and Dietetics (AND)
- FMP - Foodservice Management Professional (NRA)
- IBCLC- International Board Certified Lactation Consultant
- SFNS - School Foodservice Nutrition Specialist (SNA)
- None of the above
- Other (please specify)

Figure 1. (continued) Final survey questions.

7. What was your highest completed degree when you started working in public health nutrition/ community nutrition?

- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Doctoral Degree

8. What was your field of study for your highest completed degree when you started working in public health nutrition/ community nutrition?

- nutrition/ dietetics/ food science
- public health
- health-related field (e.g., nursing, psychology)
- basic science (e.g., biology, chemistry)
- social science (e.g., sociology, anthropology)
- education
- non-health related (e.g., engineering, business)

Figure 1. (continued) Final survey questions.

Demographic Information 2

9. How many years have you practiced in the field of public health nutrition/ community nutrition?

< 5 years

6-10 years

11-25 years

>25 years

10. What best describes your current employment status in the field of public health nutrition/ community nutrition?

Full-time (>30 hours per week)

Part-time (<30 hours per week)

11. Please select the location where you currently work:

Alabama

Alaska

Arizona

Arkansas

California

Colorado

Connecticut

Delaware

District of Columbia

Florida

Georgia

Hawaii

Idaho

Illinois

Indiana

Iowa

Kansas

Figure 1. (continued) Final survey questions.



Kentucky

Louisiana

Maine

Maryland

Massachusetts

Michigan

Minnesota

Mississippi

Missouri

Montana

Nebraska

Nevada

New Hampshire

New Jersey

New Mexico

New York

North Carolina

North Dakota

Ohio

Oklahoma

Oregon

Pennsylvania

Rhode Island

South Carolina

South Dakota

Tennessee

Texas

Utah

Vermont

Virginia

Washington

Figure 1. (continued) Final survey questions.

West Virginia

Wisconsin

Wyoming

American Samoa

Guam

Northern Mariana Islands

Puerto Rico

Virgin Islands

International

If international, please specify the country you work in:

Figure 1. (continued) Final survey questions.

12. What is your current employment setting? Choose only one answer that represents where you spend the majority of your time.

- Clinic or ambulatory care
- Charitable organization
- College/University faculty
- College/University food service
- Community public health
- Extended-care facility
- Federal agency
- Food manufacturing/distribution
- HMO
- Home health care primary
- Hospital health center
- International Non-profit, e.g. Save the Children, United Nations, Non-Governmental Organizations
- Local department of public health
- Philanthropic organization
- Religious organization, such as Catholic Relief Services
- Research center
- School food service
- Self-employed (health care)
- Self-employed (individual)
- Self-employed (organization)
- State department of public health
- None
- Other (please specify)

13. Are you required to be an RD/RDN in your position?

- Yes
- No

Figure 1. (continued) Final survey questions.

14. Are you required to speak multiple languages at work?

Yes

No

If yes, please specify which language(s) you are required to speak:

Figure 1. (continued) Final survey questions.

Non-RDNs in Public Health Nutrition/Community Nutrition

15. Are there other non-RDNs who are performing nutrition-related duties at your current organization?

Yes

No

I don't know

Figure 1. (continued) Final survey questions.

Non-RDNs in Public Health Nutrition/ Community Nutrition

16. Indicate the non-nutrition professions performing nutrition-related duties at your current organization:

- NDTR
- Nurse
- Dentist
- Public health professional
- Master's prepared public health nutritionists
- Community health education specialist (CHES)
- Community health worker
- Master's prepared public health professional
- Social worker
- Medical Doctor
- School Nutrition Specialist
- WIC nutritionist
- Other (please specify)

Figure 1. (continued) Final survey questions.

Public Health Nutrition/ Community Nutrition Roles and Functions

17. The Academy of Nutrition and Dietetics defines public health nutrition and identifies the field's main functions. Please rate the following functions related to your current position:

	Are you asked to do it?	Do you usually do it?	Are you trained to do it?
Taking a leadership role in identifying nutrition-related needs of a community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advocating for and participating in policy development and evaluation including identifying the impacts and outcome of these efforts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessing, planning, directing, and evaluating health promotion and disease prevention efforts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administering and managing programs, including supervising personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developing and/or assisting in budget preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identifying and seeking resources (e.g., grants, contracts) to support programs and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing technical assistance/consultation to policymakers, decision-makers, and others within and outside of health agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participating in research, evaluation, and demonstration projects, including interpreting and applying research findings and successful interventions to public health and nutrition programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collaborating with others to promote environmental and systems changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assuring access to healthy and affordable food and nutrition-related care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Systematically collecting, analyzing and interpreting data on population demographics, health and disease trends, and food consumption patterns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 1. (continued) Final survey questions.

18. The Academy of Nutrition and Dietetics defines community nutrition and identifies the field's main functions. Please rate the following functions related to your current position:

	Are you asked to do it?	Do you usually do it?	Are you trained to do it?
Developing, providing, and evaluating nutrition education and counseling efforts for small groups and individuals	<input type="text"/>	<input type="text"/>	<input type="text"/>
Planning, implementing, and evaluating primary and secondary prevention interventions based on community assessment data and scientific evidence	<input type="text"/>	<input type="text"/>	<input type="text"/>
Developing nutrition programs and interventions, including related educational materials and in-service education programs, that meet the cultural and linguistic needs of individuals and target populations	<input type="text"/>	<input type="text"/>	<input type="text"/>
Providing referrals to and collaborating with local health organizations to assure comprehensive nutrition services	<input type="text"/>	<input type="text"/>	<input type="text"/>
Administering programs and supervising staff, participating in care coordination or providing case management	<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 1. (continued) Final survey questions.

Public Health Nutrition/ Community Nutrition Roles and Functions

19. To what extent are you able to apply the following skills in performing your job functions? The skills originate from the Core Competencies for Public Health Professionals.

None = I am unaware or have very little knowledge of the skill

Aware = I have heard of, but have limited knowledge or ability to apply the skill

Knowledgeable = I am comfortable with my knowledge or ability to apply the skill

Proficient = I am very comfortable and confident, am an expert, or could teach this skill to others

	None	Aware	Knowledgeable	Proficient
Analytical/Assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Policy Development/Program Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural Competency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Dimensions of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public Health Sciences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial Planning and Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leadership and Systems Thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1. (continued) Final survey questions.

Public Health Nutrition/ Community Nutrition Roles and Functions 3

20. Rate your agreement with the following statement:

"The following factors prepared me to apply skills and perform work-related functions in public health nutrition/ community nutrition."

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	N/A
Undergraduate education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Graduate Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internship program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On the job training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regular supervision linked with performance appraisal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to short courses, workshops or conferences for knowledge and skill update	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to professional development opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to additional certifications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what factor is meant by the "other" response:

Figure 1. (continued) Final survey questions.

21. Rate your agreement with the following statement:

"The following factors impacted or influenced me to work in public health nutrition/ community nutrition."

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree
Leadership support for recruitment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A broad spectrum of roles and educational background are required and often fulfilled by other disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Variability in position titles and confusion with regards to what roles go with which titles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited roles for public health and community nutrition job positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salary and advancement opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to continuing education opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify what factor is meant by the "other" response:

Figure 1. (continued) Final survey questions.

Additional Comments

22. Please enter any additional comments you would like to share on your experiences working in public health nutrition/ community nutrition:

Figure 1. (continued) Final survey questions.

Dietetic Workforce Capacity Assessment for Public Health and Community Nutrition Semi-Structured Interviews

Date: _____

Start Time: _____

End Time: _____

Employment Setting:

- Clinic or ambulatory care
- Charitable organization
- College/University faculty
- College/University food service
- Community public health
- Extended-care facility
- Federal agency
- Food manufacturing/distribution
- HMO
- Home health care primary
- Hospital health center
- International Non-profit, e.g. Save the Children, United Nations, Non-Governmental Organizations
- Local department of public health
- Philanthropic organization
- Religious organization, such as Catholic Relief Services
- Research center
- School food service
- Self-employed (health care)
- Self-employed (individual)
- Self-employed (organization)
- State department of public health
- Other: _____

Gender: Male
 Female

Ethnicity/Race: Caucasian/White
 African American/Black
 Asian
 Hispanic/Latino
 Other

Age: _____

Number of years in your profession: _____

Figure 2. Description of the seven themes and corresponding example quotations from semi-structured phone interviews with U.S. and global public health and community nutrition experts.

Questions to be Asked

1. What is your current employment position? What are your major responsibilities in your current position?
2. How long have you been with your current organization? If the interviewee provides the organization name, it will not be transcribed.
3. How did you come to be involved in public health nutrition and community nutrition? How did you obtain your current position?
4. What prepared you for your current position?
 - Probe: Education
 - Probe: Experience
5. What functions do you currently perform that are specific to your position?
6. What skills are specifically required to perform these functions?
7. What is your organization's experience with recruiting RDNs? (Probe by getting details: with whom, what they know, what they have tried, how they assessed, etc.)
 - What staff, or who, from your organization have been involved in recruiting RDNs?
 - What prompted your organization to hire RDNs?
 - What was the goal?
 - What resources does your organization have for recruiting? (Financial, staff expertise, etc.)
 - How do you assess or evaluate these efforts?
8. How can RDNs contribute to public health nutrition and community nutrition in your organization? What facilitates or challenges these options?
9. How would you describe the state of RD/RDN in public health nutrition and community nutrition? Where is it now and where does it need to go? What do we need to do to make this happen?
10. What is the most important message that you want us to take away from this interview?

Closing Question:

Is there anything else that you would like to add that we didn't discuss but you think is important?

Figure 2. (continued) Final semistructured interview guide.