

Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

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Abstract

There is scant literature available on the Registered Dietitian Nutritionist (RDN) workforce in the United States, but a review of healthcare systems suggests that implementation of RDNs in primary care settings may improve access to care, patient satisfaction, and quality of care. The Area Health Education Center (AHEC), in partnership with the Hawai'i Academy of Nutrition and Dietetics (HAND), investigated 395 providers to evaluate the status of Hawai'i's RDN workforce. The research team utilized all available provider information and direct calling methodology to collect data from August 2019 to February 2020. Microsoft Excel software allowed for data analysis and ArcGIS mapping software was used to visualize provider totals and Full-Time Equivalencies (FTEs) across the state. This study identifies trends in workforce demographics and provider supply. Researchers found 100 RDNs providing direct patient care for a total of 82.4 FTEs. Women account for 94% of survey respondents, and the average age of providers was 48. RDNs who self-identify as being Asian American (41%) or White (47%) were the largest ethnic groups providing direct patient care. Seventy percent of the RDN workforce was located on O'ahu, while RDN FTEs are concentrated in mainly 5 zip codes, 1 on each of O'ahu, Kaua'i, and Maui and 2 on Hawai'i Island. Provider demand trends, increased training and retention efforts, and integration of nutritional services in healthcare teams should be further investigated.

Keywords

RDN, nutrition, primary care, healthcare, Hawai'i, supply, shortage

Abbreviations

AHEC = Area Health Education Center
CDR = Commission on Dietetic Registration
FTE = Full-Time Equivalency
HAND = Hawai'i Academy of Nutrition and Dietetics
LD = Licensed Dietitian
OHCA = Office of Health Care Assurance
RDN = Registered Dietitian Nutritionist
UHM = University of Hawai'i at Mānoa

Introduction

Registered Dietitian Nutritionists (RDN) are food and nutrition experts who provide nutritional support throughout the community in hospitals and clinics, nursing homes, private practice, dialysis centers, food industries, universities, and research.¹ The Academy of Nutrition and Dietetics (AND) outlines the path to becoming an RDN, which currently involves (i) completing a bachelor's degree with appropriate coursework, (ii) completing an accredited dietetic internship program or supervised practice pathway, (iii) passing the Commission on Dietetic Registration's

(CDR) national exam, (iv) gaining licensure, if applicable, and (v) maintaining professional education requirements, beginning in January 2024, a graduate degree will be required for CDR exam eligibility.^{2,3} A study conducted in North Carolina, Integrated Nutrition for Kids, found that integration of RDNs in primary care settings or health care teams was feasible and benefits included added focus on weight and nutrition, nutritional support for staff and other health care providers, and increased capacity for patient care.⁴ In a recent survey of cardiologists, cardiology fellows, and cardiovascular teams, providers reported feeling inadequately trained to provide nutritional support for their patients and saw a benefit to adding an RDN to their health care team.⁵ However, few RDNs are integrated in primary care models, despite researchers in the field advocating for an interdisciplinary approach to patient care.^{4,6,7} These findings demonstrate the potential for integrated nutritional support in health care, not only for the benefit of the community, but for fellow health professionals as well.

While research supports the utility of RDNs in the healthcare workforce, literature is scant on the status of the United States (US) RDN workforce. An evaluation of supply and demand trends conducted by the Health Resources and Services Administration demonstrated RDN demand in 2 scenarios, 1 of which considered an evolving healthcare system that resulted in an estimated national shortage of 1600 RDNs by 2030.⁸ Hawai'i has a licensure statute for dietitians, wherein RDNs may or may not carry a Licensed Dietitian (LD) designation.⁹ Briefly, registered dietitians and RDNs are interchangeable credentials that confer government regulations and protection, while nutritionist credential standards vary by state. No such licensing requirement exists in Hawai'i for nutritionist.¹⁰ The US Bureau of Labor Statistics reported 260 employed dietitians and nutritionists in Hawai'i as of May 2020 -- which is inclusive of both registered RDNs and non-registered, non-licensed nutritionists -- while recent reports from the Commission on Dietetic Registration include 429 local RDNs as of November 2021.^{11,12} It is unclear why this discrepancy exists, but could be explained by the year in which these reports were published or by available employment opportunities that exist in the state. RDN demand in the state of Hawai'i has not yet been evaluated.

As 1 of the most geographically isolated places in the world,¹³ Hawai'i faces unique challenges in healthcare. Geographical isolation for rural communities means limited access to clinics and hospitals, which may result in a lack of coordinated care.¹⁴

Barriers in transportation and cost of services are also of issue for geographically isolated communities.¹⁴ In rural areas and neighboring islands, public transportation is inadequate and road networks are underdeveloped due to the islands' natural terrain, furthering limiting access to care.¹³

In 2019, the Hawai'i Academy of Nutrition and Dietetics (HAND) partnered with the Area Health Education Center (AHEC) to investigate RDN workforce trends as part of a continued assessment of Hawai'i's healthcare workforce. The main objective of the study was to estimate the number of active RDN's providing direct patient care for residents of Hawai'i.

Methods

Survey and Project Development

The 2019-2020 RDN survey was modeled after AHEC's existing provider workforce surveys. The research coordinators finalized an 11-item questionnaire prior to recruitment of a research team. Survey questions were intended to gather information on employment status, location, specialty, and practice setting. Demographic information was also collected and included ethnicity, age, and education. A spreadsheet using Microsoft Excel software, v16.0 (Microsoft Corporation, Redmond, WA) was prepared for data collection and de-identified for analysis. This study is considered IRB exempt under CHS#15107.

Data Collection

An initial list of Hawai'i RDNs was compiled using data from the Hawai'i Office of Health Care Assurance (OHCA), as well as HAND. OHCA provided names of 184 LDs and their license numbers. HAND provided the names of 403 nationally registered RDNs residing in Hawai'i. Provider data was collected through community contacts and internet searches, while direct calling of medical offices and departments confirmed practice location, hours of direct patient care, and specialty of all active RDNs providing direct patient care in Hawai'i. Volunteer researchers used Google Sheets software, 2019-2020 (Google LLC, Mountain View, CA) to record data collection findings. The bulk of data collection was performed from August 2019 to February 2020 by a team of 5 undergraduate volunteers led by the AHEC research specialist. Researchers made a second attempt to reach out to known providers in November 2020, and 3 responses were returned. The 2019-2020 survey questions are included in Table 1.

The focus of the study was to investigate and confirm active RDNs providing direct patient care across clinical and non-clinical settings. RDNs working in education and administrative positions were not included in workforce estimates unless they reported spending time in patient care. Military and out-of-state RDNs, retired providers, temporary or traveling RDNs, and dietetic interns were also not included in workforce estimates. RDNs in state facilities or departments, such as the Department

of Education and Department of Health, were included only if they self-reported direct client care. RDNs whom researchers found local contact information for but were unable to confirm were categorized as 'Unconfirmed,' and those who had no available contact information were considered 'Unknown.'

Analysis

Providers with Full-Time Equivalency (FTE) greater than 0 and providing direct patient care in Hawai'i were analyzed for trends in age, specialty, FTE, race and ethnicity, education, and practice setting. FTE accounts for RDN workload by dividing providers' total work hours by 40 hours per week, a full-time workweek. Calculations for patient care over 40 hours distributed across multiple locations and/or specialties were standardized by dividing providers' total work hours at 1 location or in 1 specialty by the individual provider's total work hours. Percentages were calculated out of total responses to survey questions. For example, percentages for race and ethnicity were calculated using the total number of responses to the question, not total practicing providers, as the denominator. All analyses were conducted using Microsoft Excel. Total providers were not mutually exclusive. Providers with multiple specialties, or working in multiple healthcare settings, are counted for each specialty or setting.

Workforce distribution across the state was visualized using ArcGIS mapping software version 10.8.1 (Esri, Redlands, CA). Since a demand model for the RDN workforce was not available at the time of writing, provider supply was calculated per 100 000 population to estimate workforce density and allow for future supply comparisons.

Results

The authors pooled available resources to compile a list of 587 RDNs, from which duplicates were removed and a total of 395 RDNs were assessed. Table 2 summarizes status findings (Active, Administrative, Military, etc.) of RDNs in Hawai'i. Researchers were unable to confirm local information for 84 providers and determined that another 88 were unknown. RDNs working in education and administrative positions were not included in workforce estimates unless they self-reported time in direct patient care. Military and out of state RDNs, retired providers, temporary or traveling RDNs, and dietetic interns were also not included in workforce estimates. As a result, a total of 123 providers did not meet the inclusion criteria for workforce estimates. This survey found 100 RDNs, approximately 25% of researched providers, who are considered active and providing direct patient care in Hawai'i for a total of 84.2 FTEs. The majority (70%) of the state's clinical RDN workforce practices on O'ahu. The workforce is predominantly female (94%) and middle-aged (age range: 26-73 years old; average age: 48). Figure 1 illustrates the age distribution of Hawai'i's active RDN workforce.

Table 1. 2019-2020 Hawai'i Registered Dietitian Nutritionist (RDN) Workforce Project Survey ^a			
1. Do you provide direct healthcare services to individual patients in Hawai'i? (if you are completely administrative or non-clinical please answer "No")			
Yes ___ No ___			
2. Do you primarily serve an active duty military or military dependent population (VA registered dietitians please answer "No")?			
Yes ___ No ___			
3. What specialty/specialties do you practice and how many hours a week on average for each?			
Specialty 1	Specialty 2	Average Hours p/Week	
Clinical Nutritional Support	Clinical Nutritional Support	1. _____	
Diabetes Education	Diabetes Education	2. _____	
Renal	Renal		
Weight Management-Adult	Weight Management-Adult		
Weight Management-Pediatric	Weight Management-Pediatric		
Sports Dietetics	Sports Dietetics		
Other (please fill in)	Other (please fill in):		
4. Please tell us about your primary work environment:			
Community Health Center			
Dialysis			
Food Service Management			
Inpatient-Clinical			
Long Term Care			
Outpatient-Clinical			
Private Practice			
Other (please fill in):			
Primary Address (Office or Hospital):			
City:	State:	Zip Code:	Phone: Email(s):
How many hours per week do you see patients at this address?			
5. Is a majority of your income a result of being employed by a medical group, hospital, school (faculty) or other entity?			
Yes ___ No ___ Name of entity:			
6. If you have more than one position, please provide information for your second address:			
Second Address (Office or Hospital):			
City:	State:	Zip Code:	Phone:
How many hours per week do you see patients at this address?			
7. What ethnicity/ethnicities do you identify with?			
8. Do you provide telehealth care to Hawai'i patients? If so, how many hours a week?			
9. What year were you born?			
10. Where did you complete your Dietetic Internship (also known as Supervised Practice) (share program name and location)?			
11. What is your highest degree earned from an accredited college or university?			
a. Bachelor's Degree			
b. Master's Degree			
c. Doctoral Degree			
d. Other (please fill in):			

^a The survey was conducted via direct calling or emailing of medical offices and departments. Researchers followed the questionnaire to confirm practice location, hours of direct patient care, and specialty of all active registered dietitian nutritionists providing direct patient care in Hawai'i.

Table 2. Registered Dietitian Nutritionist Workforce Status Findings from the Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

Status	Number (%)
Active ^a	100 (25)
Administrative	9 (2)
Inactive	41 (10)
Intern	1 (< 1)
Military	14 (4)
Non-Clinical	16 (4)
Out of State	33 (8)
Retired	8 (2)
Temporary Hire	1 (<1)
Unconfirmed ^b	84 (21)
Unknown ^c	88 (22)
Total Researched	395

^a Registered dietitian nutritionists (RDNs) were considered active if they self-reported hours spent providing direct patient care.

^b RDNs for whom researchers found local contact information for but were unable to confirm were categorized as 'unconfirmed.'

^c Those who had no available contact information were considered unknown.

Table 3. Race/Ethnicity Composition of the Active Registered Dietitian Nutritionist (RDN) Workforce from the Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

Race/Ethnicity	Number of Active RDNs (%) ^a
African American	2 (3)
American Indian/Alaska Native	1 (1)
Asian	31 (41)
- Chinese	3 (4)
- Filipino	1 (1)
- Japanese	10 (13)
- Okinawan	1 (1)
- Vietnamese	1 (1)
White/European American	35 (47)
Hispanic/Latinx	4 (5)
Native Hawaiian/Pacific Islander	6 (8)
More than one race	3 (4)
Total Responses	75 ^b

^a Percent is of total confirmed.

^b Researchers were unable to confirm race and/or ethnicity for 25 of 100 active registered dietitian nutritionists.

Table 4. Total Active Registered Dietitian Nutritionists in Hawai'i from 2019-2020 by Practice Setting

Practice Setting	Number of Active RDNs (%) ^a
Community Health Center	18 (22)
Dialysis	12 (15)
Inpatient Clinical	17 (21)
Long Term Care	9 (11)
Outpatient Clinical	7 (9)
Private Practice	10 (12)
Other ^b	9 (11)
Total	81 ^c

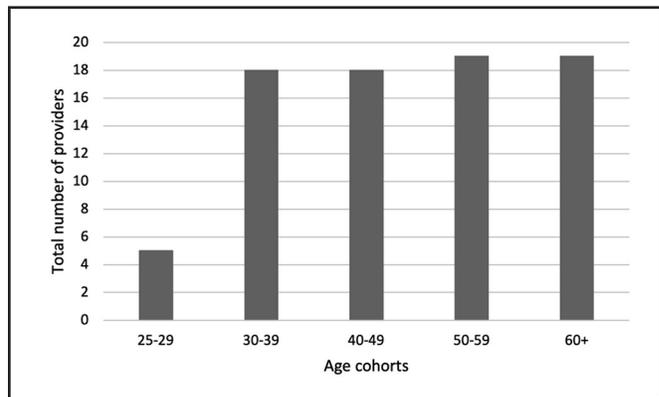


Figure 1. Age Distribution of Active Providers from the Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

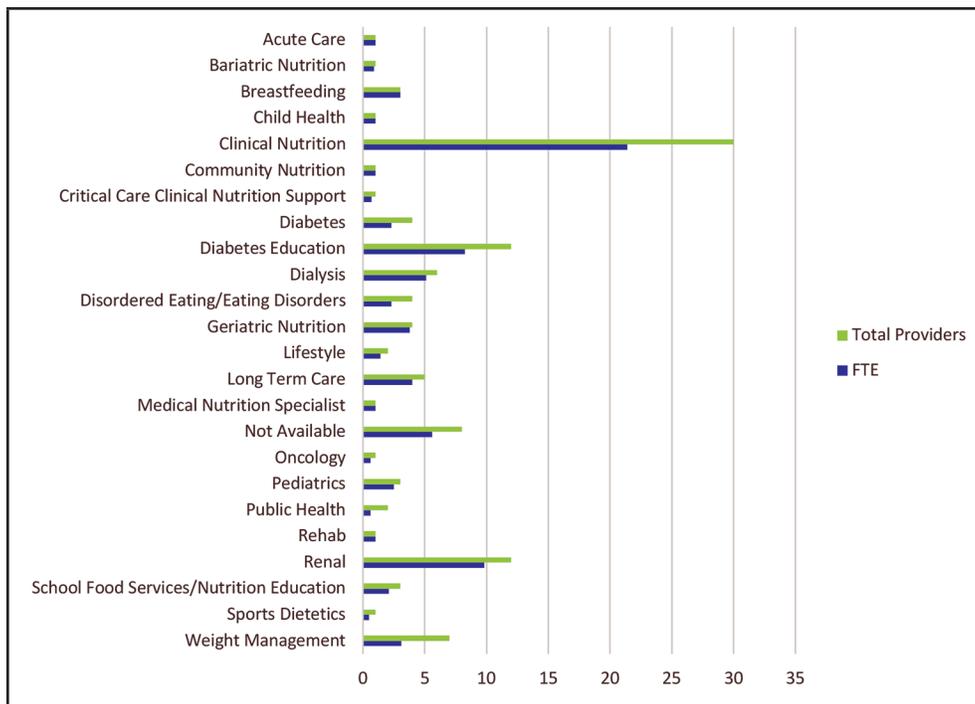


Figure 2. Total Active Registered Dietitian Nutritionists and Full-Time Equivalency by Specialty from the Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

RDNs working in education and administrative positions were not included in workforce estimates unless they reported spending time in patient care. Military and out-of-state RDNs, retired providers, temporary or traveling RDNs, and dietetic interns were also not included in workforce estimates. RDNs in state facilities or departments, such as the Department of Education and Department of Health, were included only if they self-reported direct client care.

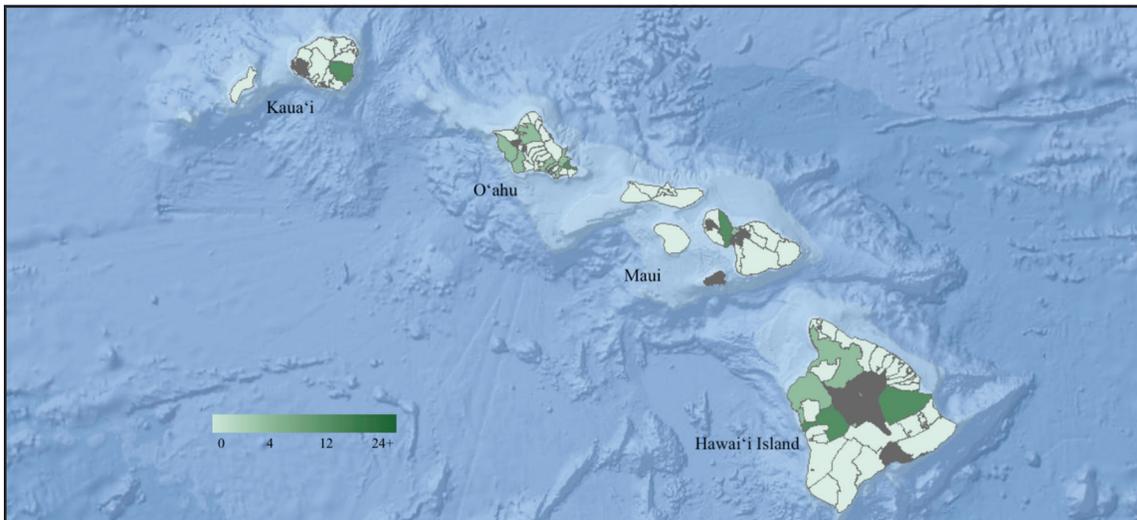


Figure 3. Density Map of Total Active Registered Dietitian Nutritionists in Hawai'i per 100 000 Population from the Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

Grey areas are unpopulated regions or military bases. Registered dietitian nutritionists were considered active and included in estimates only if providers self-reported spending time in direct patient care. Military and out-of-state, retired, temporary or traveling registered dietitian nutritionists and dietetic interns were not considered active.

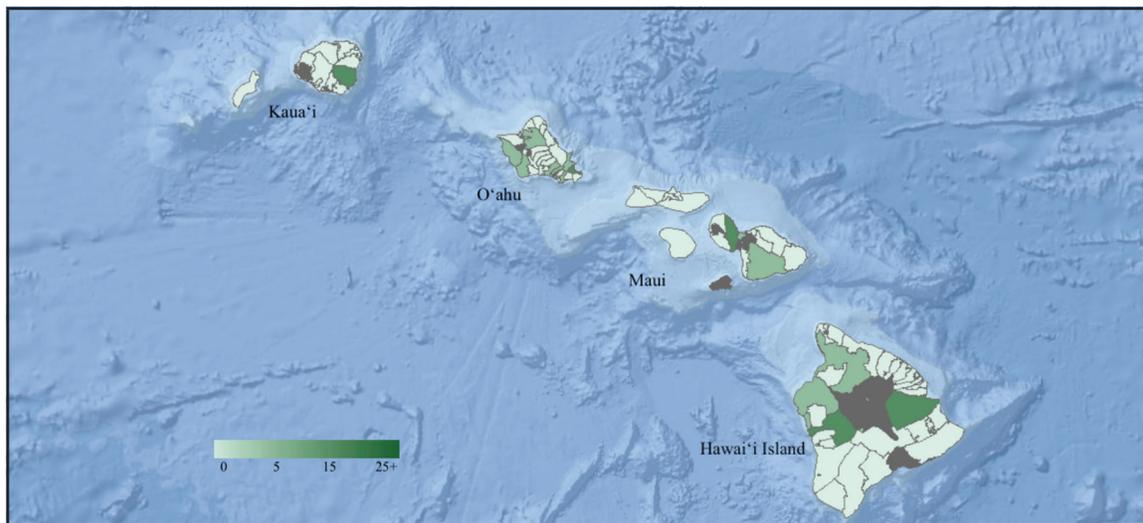


Figure 4. Density Map of Active Registered Dietitian Nutritionist Full-Time Equivalencies in Hawai'i per 100 000 Population from the Hawai'i Registered Dietitian Nutritionist 2019-2020 Workforce Assessment

Grey areas are unpopulated regions or military bases. Registered dietitian nutritionists were considered active and included in estimates only if providers self-reported spending time in direct patient care. Military and out-of-state, retired, temporary or traveling registered dietitian nutritionists and dietetic interns were not included in full-time equivalency estimates.

RDNs who self-reported being of White and Asian American race and ethnicity accounted for 47% and 41% of respondents respectively, and only 8% of respondents self-reported as being of Native Hawaiian or Pacific Islander race and ethnicity. Table 3 summarizes research findings on the race and ethnic diversity of the RDN workforce.

Data on education was also collected. Forty-two percent of respondents hold Master's degrees in science, business, or public health. Nearly 80% of respondents report completing their dietetic internship or supervised practice outside of Hawai'i, with just 17, or less than 22% doing so locally.

Nearly half (44%) of the workforce practices in clinical nutrition settings (community health centers or inpatient facilities). Figure 2 provides a comparison of the total number of active providers versus the total full-time equivalents of patient care by specialty, while Table 4 shows the distribution of practice settings. The "Other" category of practice settings includes Clinical Nutrition Support, State Department of Education, State Department of Health, Home Infusion, Rehabilitation, Residential, Telehealth, and the Hawai'i Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), where RDNs reported providing direct patient care, but outside of clinical settings.

An accurate demand model for the State of Hawai'i's RDN workforce has yet to be constructed. However, Figures 3 and 4 provide visual representation of workforce densities by zip code. Grey areas are unpopulated regions or military bases. Figure 3 depicts the ArcGIS results of RDN provider totals

per 100 000 population. RDN provider density is highest in five distinct geographic regions, 1 region on each of O'ahu, Maui, and Kaua'i, and 2 on Hawai'i Island. Figure 4 depicts similar data but for RDN FTE per 100 000 population and where a similar trend exists. The RDN workforce is heavily concentrated in mainly 5 distinct regions: Honolulu (96813) on O'ahu, Wailuku (96793) on Maui, Lihue (96766) on Kaua'i, and both Kealahou (96750) and Hilo (96720) on Hawai'i Island.

Discussion

Preliminary findings suggest that the clustering of Hawai'i's RDNs is highest in areas where large medical facilities are situated. Nearly 20% of the state's population live outside of urban areas, with proportionally more Native Hawaiians living rurally than non-Native Hawaiians.^{15,16} The majority of populated zip codes across the state of Hawai'i have extremely low RDN density, which may result in gaps in services for individuals living in those regions.

Sex representation in Hawai'i's RDN workforce mirrors that of national statistics; however, when compared to the national average age of 41,⁹ local RDNs are generally older with a mean age of 48. The Academy of Nutrition and Dietetics 2008 Needs Assessment reported that among those in the field of dietetics, the RDN profession was the least diverse in regard to race and ethnicity.¹⁷ Though the racial and ethnic diversity in Hawai'i differs considerably from national statistics, the state experiences a similar lack of minority representation in the RDN workforce. Of respondents, only 8%, or 6 providers in direct patient care self-identified as Native Hawaiian or

Pacific Islander, whereas 41% and 47% identified as being of Asian American and White race and ethnicity, respectively. Race and ethnic representation in the healthcare workforce is vital to understanding health disparities in Hawai‘i, where indigenous groups are disproportionately burdened by illness, as well as broadening provider perspectives and enabling them to better serve a diverse patient population.¹⁸ One approach to increasing diversity and representation in the RDN workforce is early outreach and the establishment of specialized academic pipelines throughout high schools and community colleges to educate students on the RDN profession. Currently, the Children’s Healthy Living Program is developing, implementing, and evaluating a Native Hawaiian scholar’s program that provides enhanced service learning and leadership activities grounded in Native Hawaiian culture.¹⁹

The University of Hawai‘i at Mānoa (UHM) hosts the state’s only accredited degree-granting dietetic program, training 14 post-baccalaureate students from 2019-2020. However, there are limited opportunities for graduates to complete their supervised training in Hawai‘i. The state has no accredited dietetic internship programs, meaning graduates must either enroll in a distance learning program and find a local preceptor, which requires an RDN to voluntarily dedicate time to mentor and teach them, or relocate to the US mainland to complete their training. This increases the likelihood of Hawai‘i losing RDNs to the continental US and could negatively impact the workforce. This study finds that less than 22% of Hawai‘i’s active RDN workforce completed their supervised practice locally. Dietetic internship opportunities in Hawai‘i are limited by the pool of qualified and willing RDNs to serve as voluntary preceptors to supervise each dietetic intern’s 1000-hour experience. The UHM Nutritional Sciences Masters of Science RDN concentration is currently seeking to increase these opportunities by working with preceptors and developing simulation activities that can replace some of the required supervised practice hours, thus easing the burden on preceptors. Another way to incentivize preceptors is the inclusion of RDNs on the Hawai‘i Preceptor Tax credit, a tax credit for eligible providers offering professional instruction to healthcare students which is part of a larger effort to build in-state academic programs and improve clinical education.²⁰

Study limitations include incomplete reporting. Though the research team exhausted all resources, it is not always possible to locate and contact every provider. Another limitation was the lack of state-specific supply and demand models, so shortage areas are difficult to determine. To overcome this, FTE and total provider estimates were calculated per 100 000 population for visualization with ArcMap software. Standardizing provider totals allows researchers to compare areas of varying population sizes and identify low- and high-density regions.

Future research on RDN demand models, state workforce trends, and the contribution allied health partners make in offsetting other professional shortages is suggested. Further understanding of the nature in which RDNs provide services to patients (ie, telehealth, in-person) may also further elucidate true gaps in service. Efforts must also be made to train and retain Hawai‘i RDNs locally to avoid worsening healthcare shortages. At the time of writing, local RDNs are not eligible for state loan repayment programs like those offered to other healthcare providers working in rural areas of Hawai‘i. Student debt relief may help restore the state’s RDN workforce by offsetting the financial burden of local providers and incentivizing long-term practice in Hawai‘i. There is a need for accessible educational programs, especially in rural areas and for those who are socio-economically disadvantaged, for the recruitment and training of underrepresented professionals.²¹ A diverse workforce is linked to community health outcomes through (1) increased access to care for racial/ethnic minorities, particularly in rural areas and (2) improved patient-provider communication, trust, and decision-making.²²

In the face of growing healthcare shortages, a shift in focus on supporting allied health partners may provide a strong foundation for restoring the workforce and improving community health. RDNs create a bridge between primary care visits and disease management through preventative lifestyle changes. Dietetic intervention statistically and clinically improves outcomes of leading causes of death including obesity and cardiovascular disease, while also cutting primary healthcare costs.²³ Increased utilization of resources like nutritional support may improve the primary care shortages seen in Hawai‘i, particularly in rural areas and for populations that are disproportionately affected by health disparities.²⁴

Conflict of Interest

None of the authors identify a conflict of interest.

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