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How Well Do the Eating Habits of Registered Dietitian Nutritionists' in the United States Align with Their Teaching Patterns?

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ABSTRACT

Background: Dietary Guidelines for Americans is a resource available and designed for professionals to help people make healthy choices to avoid chronic disease. Exploration of the Registered Dietitian Nutritionist (RDN) core health values may improve the profession's ability to address gaps in understanding health beliefs and behaviors. **Objective*:*** To determine whether the teaching patterns of RDNs align with their individual eating habits through a self-selected survey. **Design:** Quantitative study design. **Participants/Setting:** An email was sent to approximately 5,000 RDNs through the Commission of Dietetic Registration registry and 425 responded. The anonymous survey consisted of two major domains: eating patterns among RDNs and eating patterns taught by RDNs. Demographics included: age, education, scope of practice, location, income, special diet, and employment status. **Main Outcome Measures:** The main outcomes measured were eating patterns followed by RDNs and eating patterns taught by RDNs. **Statistical Analyses Performed:** A chi-square test was used to examine the association between the outcome variable with each qualitative variable. Kendall's tau-b and Cohen's κ non-parametric tests were used to examine the correlations and agreements between two ordinal food frequencies: what fit them the best versus what they recommend. Data was analyzed using SPSS Statistics Software version 25.0 with an alpha level of 0.05. **Results:** A significant difference was seen between question 2) "If you counseled yourself based on your current eating habits, would you change anything?" and question 3) "Have you experimented with dieting?" ($p=0.001$). A significant difference was seen between 1) primary tools taught versus primary teaching tools, 2) primary tools followed in personal diet versus primary tools teaching, and 3) personal choices versus counseling choices ($p= 0.007$, $p= 0.000$, $p=0.000$ respectively). **Conclusion:** It's essential for RDNs to continue as role models, fostering enhanced RDN

client/patient relationships and improving personal eating habits. Although 68% of RDNs would change their diets (vegetable and sodium intake), fundamental education and counseling is still being provided to clients and patients. Using tools and guidelines RDNs follow in their personal dietary habits coincides to their teachings. Further research is needed to expand on these positive findings.

INTRODUCTION

The eighth edition of the 2015-2020 Dietary Guidelines for Americans (DGA) makes recommendations to promote optimal health and prevent chronic disease by emphasizing nutrient-dense diets.[1] Healthy diet patterns have immense health benefits for the body as a whole. It has been observed that chronic disease is on the rise mainly due to a change in lifestyle behaviors; less physical activity, poor sleeping patterns, and high stress environments.[1]

Hruby et. al. outlined that poor dietary habits have been associated with obesity and numerous chronic diseases that have been consistently on the rise in both adults and children in the United States.[2] These dietary habits which have been outlined by the American Heart Association include increased consumption of sugar sweetened drinks, processed and fast food, and sodium laden items.[3] Additionally, Benjamin et. al. claims that low intake of fruits and vegetables, marine sources of n-3 fatty acids, nuts, and seeds have been associated with these adverse outcomes.[3, 4, 5]

In a report from the Global Burden of Disease Study, it was estimated that nearly 23% of all male deaths and nearly 21% of all female deaths in 2015 were correlated to poor dietary habits.[3] Furthermore, the American Heart Association estimated that nearly 46% of deaths in the United States in 2012 that were caused by cardiometabolic diseases such as heart disease, type 2 diabetes, and stroke were correlated with poor dietary factors.[3]

The purpose of the DGA is to inform the general public of federal food, nutrition, and health policies and programs with its overall goal being to improve and maintain overall health and reduce risk.[1,6] This resource is available and designed for professionals to help people make healthy choices to avoid falling victim to chronic disease. Fitzgerald et. al. described that healthy choices include healthful dietary patterns, sleeping patterns, and physical activity and how they

synergistically contribute to an individual's health. These choices are translated into practice by providing options tailored to the individual. Fitzgerald et. al. suggests that this is where an experienced and well-trained healthcare provider, specifically a Registered Dietitian Nutritionist (RDN), is found useful.[7]

The Academy of Nutrition and Dietetics (AND) defines an RDN as a food and nutrition expert who translates the science of nutrition and dietetics into practical ways of healthful living.[8] They work in different environments such as hospitals, schools, nursing homes, fitness centers, food service industries, private practices, and other domains. Advocating the advancement of dietetics and raising awareness of the importance of nutrient status is another way RDNs prove their value.

Nutrition education is a subject that is very briefly taught within various healthcare professions. The need to encourage and keep this matter at the forefront of learning is critical to increase effective treatment, prevention, and diagnosis. Rose Ann DiMaria-Ghalili et. al. claims that RDNs are extremely influential in this respect; they have been taught the depths of nutritional science and it is their job to share this wealth of knowledge.[9, 10] Habitual patterns of behavior play a part in any health professional's career. An RDN will exemplify specific personality traits compared to other healthcare individuals which further solidifies their role in lifelong health.[11]

With the comprehension and intense education RDNs receive, one would assume their eating habits adhere to these DGA guidelines. A study completed by Dickenson et. al. revealed that those "dietitians surveyed said they followed healthful habits including eating a balanced diet (96%), managing stress (92%), visiting their own healthcare professional regularly (86%),

exercising regularly (83%), maintaining a healthful weight (80%), and getting a good night's sleep (72%).”[12] After all, they should be the leading experts in the field; the individuals clients turn to for advice and counseling. However, contrary to the previous study, Grace-Farfaglia wrote that “limited evidence on the wellness capacity of dietitians leaves a gap in our understanding of how dietitians’ health philosophy and lifestyle fit with their professional self-concept. Exploration of the Registered Dietitian Nutritionists’ core health values may improve the profession’s ability to address gaps in our understanding of health beliefs and behaviors, and their relationship to well-being."[13] Keeping this study in mind, the information the RDN is providing might not be deemed credible if a client sees them contradicting what they represent. There is circulating evidence that refutes both ends of the spectrum. Therefore, the purpose of this graduate student research study is to determine whether the practices of RDNs align with their individual eating habits through a self-selected survey.

SUBJECTS

We recruited approximately 5,000 male and female respondents that range in age from 21 to 65 years. Our participants are found throughout the United States and are recruited utilizing the Commission on Dietetic Registration email contact information that we requested and received for current Registered Dietitian’s throughout the U.S.

The inclusion criteria of this study included: ages 21-65 years old, have active Registered Dietitian or Registered Dietitian Nutritionist credential in the United States, and work full time, part time, per diem, and/or private practice positions. The exclusion criteria were Certified Nutrition Specialists.

All methods and procedures were approved by the Institutional Review Board of Loma Linda University prior to the start of the study. The purpose and basic design of the study and their role in the study will be described to potential participants.

METHODS

This study was conducted using an anonymous, online survey to obtain quantitative data for analysis. Graduate students created the survey through *Qualtrics Survey Software.* To evaluate effectiveness, a sample survey was administered among a panel of 10 Registered Dietitian Nutritionists (RDNs). Appropriate changes were made based on their feedback. An email was sent to approximately 5,000 RDNs through the Commission of Dietetic Registration registry. Those who click on the link to the survey provided consent to participate in the study. The survey took approximately 10 minutes to complete; participants needed an online device in order to complete the survey. It consisted of 20 questions, using multiple choice and Likert scale questions. The two major domains included: eating patterns among RDNs and eating patterns taught by RDNs. Demographics incorporated were age, education, practice, location, income, special diet, and employment status. Examples of questions included: *"How often do you drink sugar-sweetened beverages?"* and "*A patient comes in looking for healthful eating advice. For each category, choose the amount that measures what you would recommend?*"

PROCEDURES

Participants were emailed a link to complete the survey through *Qualtrics Survey Software*. Participants read an introductory information sheet and then decided whether they would accept or reject the invitation to take the survey. Participants accepted the invitation by

clicking on the link to begin. Upon completion, participants were offered a chance to put their name into a random drawing for one of three $50 gift cards to Target. For those participants interested, they provided their email address by responding to the invitation email.

STATISTICAL ANALYSIS

After data was collected, frequency, chi-square, and non-parametric tests were performed using SPSS statistics software. A chi-square test was used to examine the association between the outcome variable with each qualitative variable. Frequency (%) were computed for qualitative variables. Kendall's tau-b and Cohen's κ non-parametric tests were used to examine the correlations and agreements between two ordinal food frequencies: what fit RDNs the best versus what they recommend.

RESULTS

Emails were sent to approximately 5,000 RDNs which were obtained through the Commission of Dietetic Registration Registry. Four hundred and twenty-five participants responded. Participants were asked to complete an online anonymous survey that consisted of two major domains: eating patterns among RDNs and eating patterns taught by RDNs.

Additionally, demographics were incorporated into the survey and assessed age, race, education, scope of practice, location, income, special diet, gender, work status, and experience. Referring to Table 1, of those who participated, 384 were female, 12 males, and 29 chose not to answer. Ages ranged from 21 through 61+ with a majority, nearly 60%, falling between 21 and

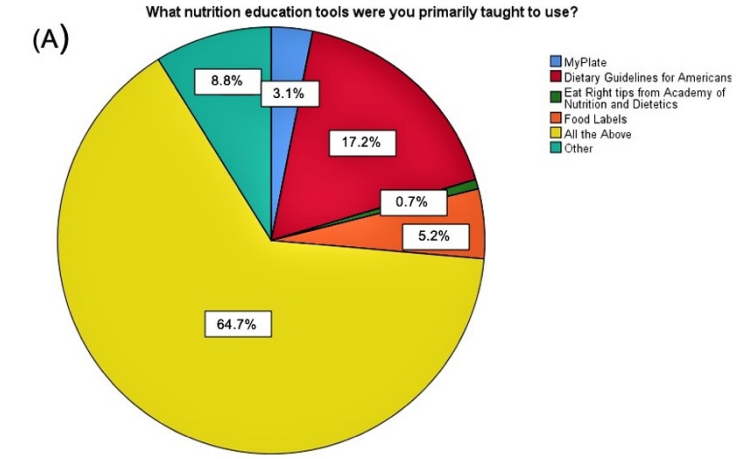
40 years of age. Years of experience varied from 0 through 20+ years of service with 37% of respondents categorizing themselves in the 0 – 5-year range. Bachelors and master's degrees combined to make up nearly 91% of education level responses. Work status responses found that nearly 63% were full time RDNs. Of the 425 participants, approximately 34% practice in a Clinical setting.

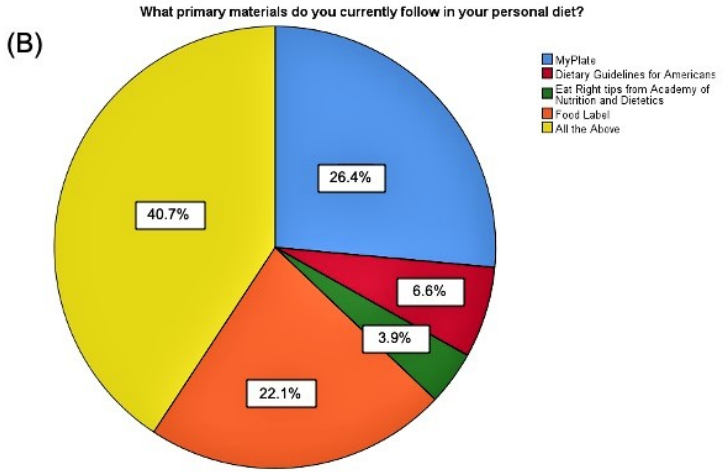
Table 1. Frequency of Demographic Characteristics

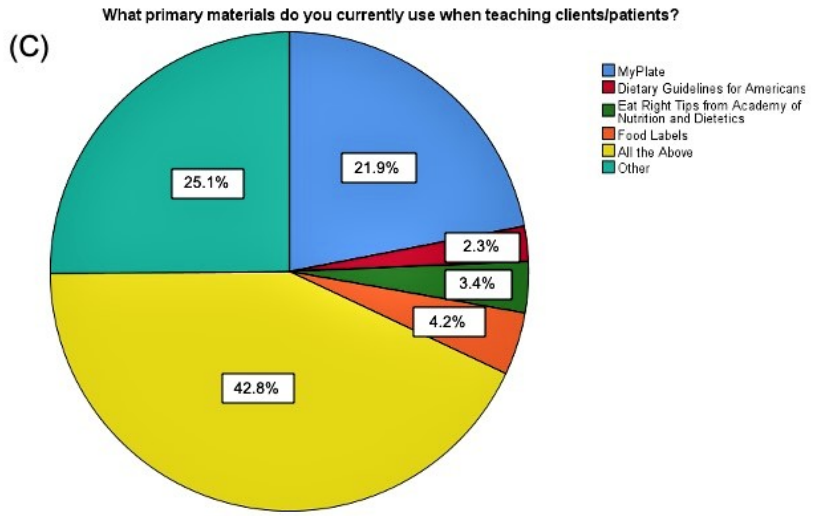
Category	Frequency (%)
Age (N=398)	
21-30	130 (30.6%)
31-40	113 (26.6%)
41-50	58 (13.6%)
51-60	59 (13.9%)
61+	38 (8.9%)
Years of Practice (N=399)	
0-5	158 (37.2%)
10-Jun	78 (18.4%)
15-Nov	38 (8.9%)
15-20	28 (6.6%)
20+	97 (22.8%)
Scope of Practice (N=425)	
Clinical	144 (33.9%)
Foodservice	13 (3.1%)
Admin	16 (3.8%)
Community	44 (10.4%)
Outpatient	91 (21.4%)
Other	87 (20.5%)
Gender (N=396)	
Male	12 (2.8%)
Female	384 (90.4%)
Annual Income (N=391)	
<$35,000	48 (11.3%)
$36,000-$55,000	130 (30.6%)
$56,000-$75,000	115 (27.1%)
$76,000-$95,000	47 (11.1%)
$96,000+	51 (12.0%)
Geographic (N=395)	
Northeast	93 (21.9%)
Southeast	73 (17.2%)
Northwest	47 (11.1%)
Southwest	63 (14.8%)
Midwest	119 (28.0%)
Race (N=395)	
Black or African-American	3 (0.7%)
Hispanic/Latino	21 (4.9%)
Native American	3 (0.7%)
Asian/Pacific Islander	18 (4.2%)
White	346 (81.4%)
Other	4 (0.9%)
Level of Education (N=397)	
Bachelors	157 (36.9%)
Masters	228 (53.6%)
Doctorate	12 (2.8%)
Special Diet (N=395)	
Yes	62 (14.6%)
No	333 (78.4%)
Work Status (N=395)	
Full Time	265 (62.4%)
Part Time	66 (15.5%)
Per Diem	30 (7.1%)
Private Practice	34 (8.0%)

Figure 1 (A-C) shows the results of primary materials learned in school, followed in their personal diet, and taught to their clients/patients. Nutrition education tools the RDN was primarily taught to use had a significant majority, nearly 65%, answering all of the above, which included MyPlate, Dietary Guidelines for Americans, Eat Right Tips from Academy of Nutrition and Dietetics, and Food Labels (Figure A). Primary materials currently followed in one's personal diet provided a wide range of results. All the above accounted for nearly 41%, 26% using MyPlate, 22% utilizing Food Labels, 7% Dietary Guidelines for Americans, and 3% using Eat Right Tips from Academy of Nutrition and Dietetics in their personal diet (Figure B).

Primary materials one currently uses when teaching clients/patients found that nearly 43% answered all of the above, 25% for Other, 22% for MyPlate, 4% for Food Labels, 3% for Eat Right Tips from Academy of Nutrition and Dietetics, and 2% for Dietary Guidelines for Americans (Figure C).







Figures 1 (A-C). Frequency of primary materials learned, followed, and taught by RDNs.

As illustrated in Figure 2, nearly 70% of RDNs polled would change their current diets if they counseled themselves on their current eating habits, whereas just over 30% would not make any changes.

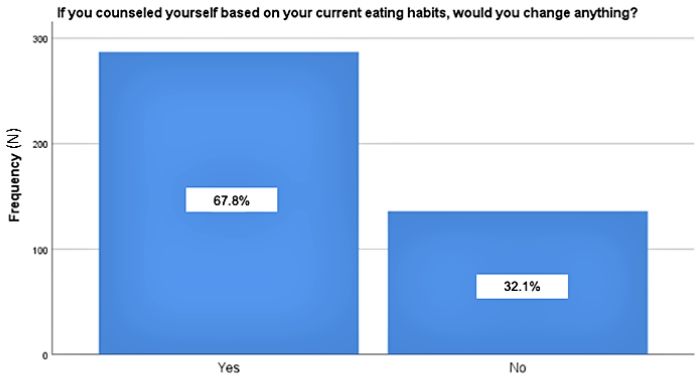


Figure 2. Percentage of RDNs that would change their current diets.

A significant difference was seen in the tools RDNs use to teach and the education they are taught in school (p=0.007), and the materials they follow in their personal diet (p=0.000). Out of the 425 participants, nearly 49% mentioned that they currently feel pressure to eat a certain way because they are an RDN. Additionally, nearly 70% mentioned they would change their diets if they counseled themselves based on their current eating habits while just over 60% have experimented or are experimenting with dieting of some kind. A significant correlation was found between what RDNs eat and what they recommend based on the food frequency questionnaire (p=0.000).

DISCUSSION

This graduate research study aimed to determine whether the teaching patterns of RDNs align with their individual eating habits through a self-selected survey. To achieve this, usual

eating habits and teaching methods of RDNs across the United States in different scopes of practice were identified using an online survey. It was hypothesized that there is a positive correlation between what RDNs eat, what they were taught, and what they are teaching to patients/clients.

Both the tools RDNs use to teach and the education they were taught in school and the materials they follow in their personal diet were found to differ significantly. The years of training that RDNs pursue is beneficial to all parties involved. There are many factors that affect the retention and the decay of knowledge, skills, and behaviors. A review conducted by Ford, Baldwin, and Prasad (2018), found that decreases in the use of learned skills could be a result of skill decay. With no chance to ever use the knowledge, skills, or trained behaviors once learned, poor intrinsic or extrinsic motivation, or a lack of rewards, the tools one was taught, may be forgotten. Investing in training is related to positive outcomes, contributes to competitive advantage, and is related to profit growth.[14]

Although Dickenson et. al. found that RDNs reported following healthful habits such as eating a balanced diet (96%), on the contrary, we found that nearly (70%) of dietitians surveyed would change their current diets if they counseled themselves on their current eating habits. While these findings differ significantly, we postulate the reason for this is due to the difference in sample size, the way we worded the question, the fact that those in the Dickenson study were part of an incentive program, and the respondents were pulled from a limited practice setting.

Our survey found that 34% of RDNs were working in the inpatient field. In this type of setting, patient or client care is typically accomplished by a host of healthcare providers; doctors, nurses, physical therapists, respiratory therapists and many more, may play a part in the well-

being of a patient. Could the lack of nutrition knowledge that other healthcare providers receive influence the RDN? The patient? In a qualitative study completed in 2019, Rossi et. al., discussed the scant few hours of nutrition education medical professionals receive throughout their medical curriculum.[15] These findings coincide with the challenges found in the literature by Rose Ann DiMaria-Ghalili et al.[9] Those within the patient health care team in the clinical setting are not exposed to enough nutrition education in their own respective schooling. What they say, teach, and the way they talk about other scopes of practice can seriously impact the patient's decisions.

STRENGTHS & LIMITATIONS

One major strength of this study is there is very limited research on the eating habits of RDNs themselves. Statistically significant findings were centered on the eating habits of the RDN. These findings can contribute to the growing body of knowledge that is focused on the Registered Dietitian Nutritionist.

Although hundreds of RDNs completed the survey, the initial survey was sent to thousands across the nation. The major limitation of this study is the sample size. A larger sample size would have shown a better representation of our desired cohort.

CONCLUSION

Although 68% of RDNs would change their diets (vegetable and sodium intake), fundamental education and counseling is still being provided to clients and patients. Using tools and guidelines RDNs follow in their personal dietary habits coincides to their teaching methods. It's essential for RDNs to continue as role models, fostering enhanced RDN client/patient

relationships, and improving personal eating habits. Further research is needed to better understand the relationship RDN's have with their clients and how that ties into their personal lives while looking at motivational factors, internal pressures, and/or outside stimuli. We hope that with these findings, RDNs will take their teaching methods and beliefs, and apply them to their own lives to serve as leaders in nutrition and dietetics.

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APPENDIX

Survey: Eating Habits among RDNs vs. Eating Patterns Taught by RDNs

PERSONAL EATING HABITS:

1. Do you currently feel pressure to eat a certain way because you are an RDN?
    a. Yes
    b. No
2. If you counseled yourself based on your current eating habits, would you change anything?
    a. Yes
    b. No
3. Have you experimented with dieting?
    a. Yes
    b. No
4. If you have experimented with dieting, what was your reason?
    a. Weight Loss
    b. Weight Gain
    c. Medical
    d. Social Influence
    e. Personal
    f. Other
5. What nutrition education tools were you primarily taught to use in school?
    a. MyPlate
    b. Dietary Guidelines for Americans
    c. Eat Right tips from Academy of Nutrition and Dietetics
    d. Food Labels
    e. All the Above
    f. Other (Specify)
6. What primary materials do you currently follow in your personal diet?
    a. MyPlate
    b. Dietary Guidelines for Americans
    c. Eat Right tips from Academy of Nutrition and Dietetics
    d. Food Label
    e. All the Above
    f. None of the Above
7. How often do you incorporate the following into your diet and lifestyle?

	Rarely/Never	1-2 times/week	3-5 times/week	1-2 times/day	3-4 times/day	5+ times/day
Fruit						
Vegetable						

Whole Grains						
Dairy						
Protein						
Saturated Fats (in the form of butters, creams)						
Added Sugars (beverages, sweets)						
Snacks						
High Sodium						
Exercise						
Water						

DEMOGRAPHICS:

8. How long have you been a practicing RD?
    a. 0-5 years
    b. 6-10 years
    c. 11-15 years
    d. 16-20 years
    e. 20+ years
9. How old are you?
    a. 21-30 years
    b. 31-40 years
    c. 41-50 years
    d. 51-60 years
    e. 61+ years
10. Which option best describes your current work status?
    a. Full Time
    b. Part Time
    c. Per Diem
    d. Private Practice
11. Which category best describes your scope of practice?
    a. Clinical

b. Foodservice
c. Administration
d. Community
e. Outpatient
f. Other (Specify)

12. Gender
    a. Male
    b. Female
13. Do you follow a special diet due to a medical condition?
    a. Yes
    b. No
14. Which category best fits your annual income?
    a. <$35,000
    b. $36,000-$55,000
    c. $56,000-$75,000
    d. $76,000-$95,000
    e. $96,000+
15. In what geographic location do you live?
    a. Northeast
    b. Southeast
    c. Northwest
    d. Southwest
    e. Midwest
16. Please specify your race:
    a. Black or African-American
    b. Hispanic/Latino
    c. Native American or American Indian
    d. Asian/Pacific Islander
    e. White
    f. Other
17. Choose the highest level of education you've completed:
    a. Bachelors
    b. Masters
    c. Doctorate

TEACHING PATTERNS:

18. Do you offer diet plans for your clients?
    a. Yes
    b. No
19. If you do offer diet plans for your clients, which is the most recommended?

a. Weight Loss
b. Weight Gain
c. Medical
d. Client Specific Requests
e. Other

20. What primary materials do you currently use when teaching clients/patients?
    a. MyPlate
    b. Dietary Guidelines for Americans
    c. Eat Right tips from Academy of Nutrition and Dietetics
    d. Food Labels
    e. All the Above
21. A generally healthy patient comes in looking for lifestyle advice. For each group, choose the category that best fits what you would currently recommend:

	Rarely/Never	1-2 times/week	3-5 times/week	1-2 times/day	3-4 times/day	5+ times/day
Fruit						
Vegetable						
Whole Grains						
Dairy						
Protein						
Saturated Fats (in the form of butters, creams)						
Added Sugars (beverages, sweets)						
Snacks						
High Sodium						
Exercise						
Water						