Adoption of Evidence-Based Guidelines by Renal Dietitians in the United States

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This article has been approved for 1.5 CPE units. The online CPEU quiz and certificate of completion can be accessed in the Members Only section of the RPG web site via the My CPEU link. This CPE offering is available to current RPG members only and the expiration date is January 31, 2013.

Introduction

Twenty-six million: the number of American adults that have chronic kidney disease (CKD), with millions of others at risk for developing the disease (1). CKD, the slow loss of kidney function over time, has no cure and can lead to end-stage renal disease (ESRD) and eventually death from the buildup of fluids and waste products in the body (2). CKD patients (without CKD co-morbidities), have double the healthcare costs when compared to those without CKD due to an increased need for prescriptions, outpatient and inpatient visits, and longer hospital stays (3).

In July 2010, the American Dietetic Association (ADA) released evidence-based guidelines for the treatment of adults with CKD stages 1-5 and post kidney transplant patients, excluding dialysis (4). Previous guidelines had been published in 2001. The 2010 Guidelines made 24 recommendations (4). Medical nutrition therapy based on these guidelines is used to prevent progression and treat symptoms of CKD including protein-energy malnutrition and electrolyte and mineral disorders. Use of the guidelines can also minimize the impact of co-morbidities (diabetes, obesity, hypertension, lipid metabolism disorders) associated with the progression of kidney disease (4). However, patients cannot benefit from these guidelines unless they are implemented.

Following the model of two studies, one conducted in Canada and the other in the US (5,6), we surveyed renal dietitians across the US to identify to what degree they use the 2010 ADA CKD guidelines and possible barriers that may influence use of these guidelines. We hypothesized that at least 90% of renal dietitians serving CKD patients (stages 1-5 including post kidney transplant, not on dialysis) in the US were aware of the new ADA CKD guidelines, and that greater than 70% of dietitians would use at least one of the guidelines in their practice. We expected that 50% of dietitians would report using three or more guidelines and that a significant barrier to guideline use would be lack of time and/or resources.

General Design

Cross-sectional design was used to survey renal dietitians in the United States serving adult CKD patients (stages 1-5 including post kidney transplant, not on dialysis). This study was approved by the Institutional Review Boards at Oregon Health & Science University.

Instrument:

The survey included 31 open- and closed-ended questions separated into: questions that assessed knowledge/use of guidelines, questions that assessed factors that impact knowledge/use of guidelines, and questions regarding demographic characteristics of the survey sample. The survey was created and administered through ConstantContact.com and was estimated to take participants less than 15 minutes to complete. The questions included in the survey were adapted from a survey used by Burrowes et al, a 2005 pilot study of US renal dietitians, to evaluate the clarity and validity of the National Kidney Foundation Kidney Disease Outcome Quality Initiative (NKF-K/DOQI) Adult Nutrition Guidelines (5).

Participants:

The target population for this questionnaire was male and female renal dietitians in the US serving CKD patients (stages 1-5 including post kidney transplant, not on dialysis). Participating dietitians needed to be members of the National Kidney Foundation Council on Renal Nutrition Listserv (NKF-CRN) or the American Dietetic Association Renal Dietitians Dietetic Practice Group (ADA RPG). An email invitation to participate in the study was sent to all members of these organizations. This invitation included an explanation of the purpose of the study, the inclusion criteria (dietitians who worked with CKD patients stages 1-5 including post kidney transplant but excluding dialysis), and a

link to the online survey. Participant consent was obtained within the Constant Contact questionnaire. One week after the initial email invitation was sent, a reminder email with a link to the online survey was emailed to members. The questionnaire was active for a period of two weeks in spring 2011.

Data Analysis:

Survey data was analyzed using descriptive statistics. To determine statistical significance, we needed a minimum of 73 valid responses from our survey to a maximum of 385 responses. Findings were considered statistically significant if p-values were <0.05. Survey responses were qualitatively analyzed to identify themes related to barriers and benefits of guideline use, and sorted by demographic data such as age and years of dietetic experience.

Results

The survey was distributed to 3,551 listserv participants in the U.S., and 69 responses were received, for a response rate of 2%. There were 65 (98%) useable surveys. Respondents who were not practicing renal dietitians (2%) or who did not complete the survey (<1%) were excluded.

Demographics:

All respondents were female and all four major geographical regions (Northeast, Midwest, South, West) of the country were represented, with the greatest participation from the South (36%) and Midwest (26%). The largest group of participants (32%) worked in large cities with greater than 500,000 people, while another 25% of respondents worked in smaller cities with between 50,000-149,999 people. The majority of participants worked in free-standing, for-profit renal centers (57%). Of the participants surveyed, 99% were registered dietitians and 1% were dietetic technicians. Only 26% were certified specialists in renal nutrition (CSR), and 30% had a Master's degree. The majority of participants (65%) had an annual salary between $45,000 and

Figure 1
Age of Participants Compared to Years of Dietetic Experience

	Years of Dietetic Experience (n=65)			
Age	0-5 Years	6-10 Years	11-20 Years	21 or More
Under 25	0	0	0	0
26-35	5	10	2	0
36-45	0	2	9	0
46-60	0	1	8	23
61 and up	0	0	0	6

Figure 2
Guideline Implementation Related to Years of Dietetic Experience

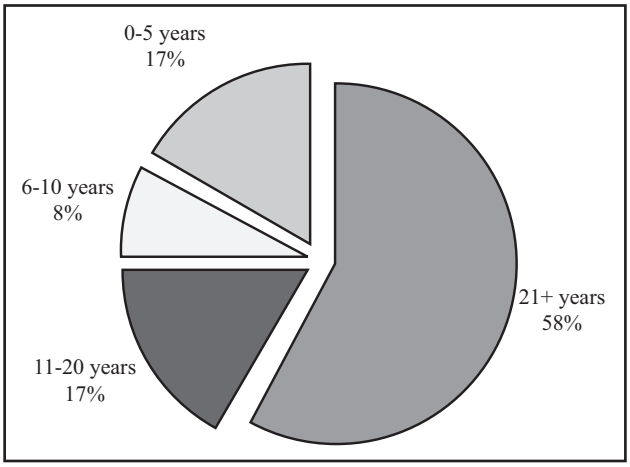


Figure 3
Summary of Implementation of Individual ADA CKD Nutrition Guidelines

Which guidelines have you implemented?	# of Responses	Response Ratio
Anthropometric Assessment Options	16	40%
Assess CKD-Mineral and Bone Disorders	28	70%
Assessment of Biochemical Parameters	24	60%
Assessment of Food Nutrition-Related History	22	55%
Assessment of Medical/Health History	20	50%
Calcium	26	65%
Coordination of Care	19	48%
Education on Self-Management Behaviors	17	43%
Energy Intake	24	60%
Fish Oil/Omega-3 Fatty Acids	19	48%
Medical Nutrition Therapy (Non-Dialysis)	17	43%
Monitor and Evaluate Adherence to Nutrition and Lifestyle Recommendations	26	65%
Monitor and Evaluate Biochemical Parameters	24	60%
Multivitamin Supplementation	26	65%
Physical Activity	18	45%
Potassium	27	68%
Protein Intake	31	78%
Sodium	26	65%
Total	40	100%

$64,999. Figure 1 shows that the largest group of respondents (n= 23) was between 46-60 years old with 21 or more years of overall dietetic experience. The majority of the respondents had between 6-10 years of renal dietetic experience (29%).

Familiarity with the Nutrition Guidelines:

Only 66% of renal dietitians responded that they were aware of the new ADA CKD guidelines. Of that percentage, 25% have read all of the guidelines, 36% have read some of the guidelines and 6% are aware, but have not read any of the guidelines. Of the total respondents, 33% were not aware there were new guidelines and had not read any of the guidelines. Figure 2 shows guideline implementation with regard to age. Participants between the ages of 41-60 (46%) with 21 or more years of dietetic experience (42%) were most likely to be aware of the guidelines and had implemented the guidelines.

The majority of respondents who reported being aware of the new guidelines (58%) implemented at least one of the guidelines and 52% reported implementing three or more guidelines. Figure 3 shows a percentage breakdown of guideline implementation. Participants were most likely to implement guidelines on protein intake (78%) and least likely to implement guidelines on dyslipidemia and CKD (23%). Major barriers to implementing the guidelines included not being aware (33%), lack of time (13%), and lack of necessary tools (9%).

Evaluation of Nutritional Status:

Since the release of the guidelines, only 25% of respondents report that they have changed the parameters they use when evaluating a patient's nutritional status. Figure 4 ranks participant's perception of importance of nutrition parameters on a scale from most important (score = 1) to least important (score = 10). Participants ranked nutritional assessment parameters related to change in body weight as most important and body component analysis by Dual Energy X-Ray Absorptiometry (DEXA) as least.

Assessment of Nutrient Intake and Body Composition:

Participants were asked how they assess nutritional intake in CKD patients not on dialysis. 44% of participants reported 24-hour food recalls as the most common method to evaluate dietary intake. Calculating numbers by hand (42%) or by diet exchanges (28%) were the most frequent methods used to estimate dietary intake.

Measuring height (84%) and weight (87%) were the most common anthropometric measures used, yet only 27% of participants have a stadiometer to measure height. Most respondents (98%) report that they do not measure a patient's skinfold thickness and only 15% have calipers to perform skinfold anthropometry.

Figure 4
Importance of Parameters to Evaluate Nutritional Status

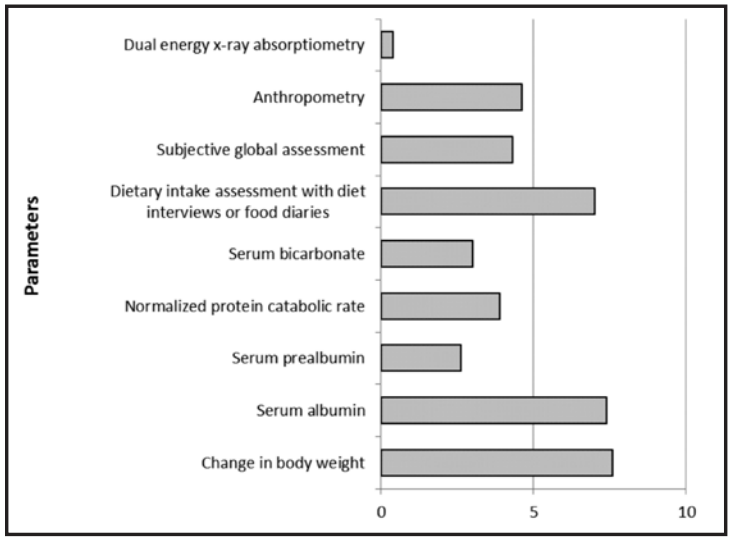
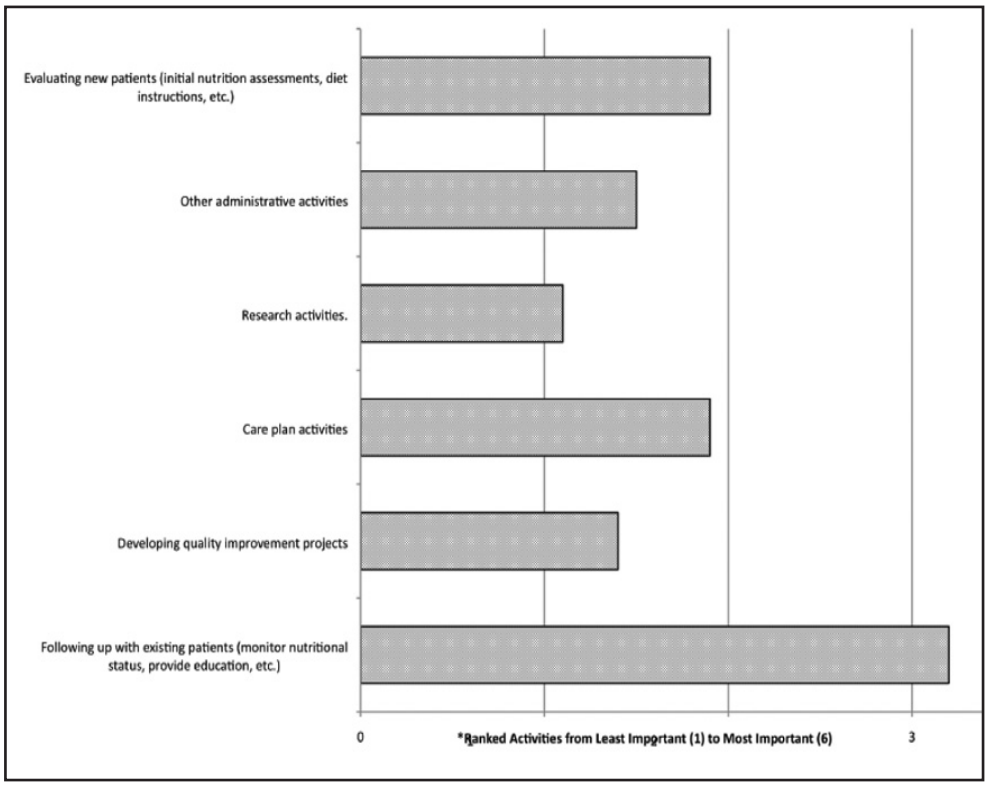


Figure 5
Participants Rank Importance of Activities



Daily Activities and Workload:

The majority of respondents (67%) reported spending less than 10 hours a month working with CKD patients not on dialysis. In Figure 5, participants were asked to rank the amount of time spent each month on nutritional services on a scale of 1-6, six being the most important. Participants spent the most time following up with existing patients, spending an average of 26-50 hours per month monitoring nutritional status, providing education, etc.

Discussion

Other surveys of this kind have been conducted with renal dietitians to ascertain the use of practice guidelines, but this survey is the first to be directed specifically to renal dietitians serving CKD patients not on dialysis (5,7). This survey had a small response rate (2%), although representation from all major regions of the country was achieved. We may have had limited response because only two emails were sent to listserv members asking them to complete the online questionnaire, or due to the fact that the majority of renal dietitians work with patients on dialysis and not CKD patients not on dialysis. No incentives were offered to listserv members, which may have increased participation.

Implementation of Guidelines:

Of survey respondents, the majority (66%) indicated that they were aware of the new ADA CKD guidelines. Slightly over half (58%) reported implementing at least one of the guidelines, and 52% reported implementing three or more of the guidelines. A third of participants indicated that they were unaware of the guidelines. Similar findings were reported in a 2005 study by Burrowes, et al, where the vast majority of renal dietitians were aware of evidence-based practice guidelines but only a minority of the dietitians reported actually using the guidelines in practice (5). Due to our limited response rate, we were unable to determine statistical significance. Therefore, our results are representative of our sample of respondents, but cannot be generalized to the overall population of U.S. renal dietitians.

Since the release of the new ADA CKD guidelines, most survey respondents report they have not changed the nutrition assessment process of their patients. The majority of participating dietitians reported parameters related to changes in body weight to be the most important indicators of nutritional status. The most commonly reported method of estimating dietary intake was 24-hour recall. Similarly, in Burrowes, et al (2005) dietitians indicated the most important criteria for evaluating patient nutritional status were the same before and after the release of evidence-based practice guidelines. These indicators included serum albumin, weight changes, dietary interviews, and food diaries (5). Our results, and those of similar studies, indicate that new renal practice guidelines have had little impact on how renal dietitians assess their patient's nutritional status and dietary intake. Large private organizations often have their own protocols and guidelines for nutrition assessment, renal dietitians working for these companies may use company guidelines rather than referring to the ADA CKD standards of practice. More effort should be dedicated to educating dietitians, especially those working for large private organizations, about the new ADA CKD guidelines.

Barriers to Guideline Implementation:

A number of factors were identified by respondents as barriers to guideline implementation. Being unaware of the guideline was the most frequently cited challenge to implementation (33%). However, this was not identified as a significant barrier in other studies. In Burrowes, et al, the most significant challenge noted was the lack of necessary resources to implement new guidelines. In our study, only 9% of respondents reported lack of necessary tools as a barrier to guideline implementation. In a similar study by Trudel, et al the most significant barrier to guideline implementation was "human resource allocations", which included both the allocation of funds as well as the time necessary to implement guidelines (7). Lack of time was a common barrier noted by dietitians in our study (13%), as well as 40% of participants in the 2005 study by Burrowes, et al (5).

In Trudel, et al's 2010 study, they found that dietitians who had been practicing in the field of renal dietetics for greater than five years were less likely to implement guidelines because they possessed a personal bias or sensed a conflict in the evidence supporting the new guidelines. Trudel, et al hypothesized that as renal dietitians gain experience, they may use their clinical judgment more often than guidelines to direct their practice (7). In our study, we found that very experienced renal dietitians (between the ages of 46-60 years of age and with 21 or more years of dietetic experience) were the most likely to participate in the survey (42% of respondents). In contrast to Trudel's study, we found that this group of highly experienced renal dietitians was also the most likely to be aware of and to implement the new guidelines. However, due to our limited sample size, it is difficult to make any generalizations about implementation and knowledge of the guidelines based on age group or experience level.

Limitations:

Since this survey was administered online as a web-based questionnaire, our participant population may not be representative of all renal dietitians because those who are more comfortable with the internet may have been more likely to complete the survey. It is also possible that differences in guideline implementation were related to factors of dietetics that we did not inquire about in our survey. Another

limitation of this study was that it was intended to capture the perceptions of renal dietitians who work primarily with CKD patients not on dialysis. However, the majority of respondents (67%) indicated they spend less than 10 hours each month working with patients not on dialysis. We suspect that most renal dietitians do not work exclusively or even predominantly with CKD patients not on dialysis. Instead, we think that general dietitians may be more likely to interact with CKD patients before they become dialysis-dependent, but general dietitians generally do not join NKF CRN or RPG which is a limitation to the study participant pool.

Conclusion

Our findings indicate that, in contrast to our hypothesis, fewer than 70% of renal dietitians surveyed have implemented at least one of the new ADA CKD guidelines; however, in line with our hypothesis, slightly greater than 50% have implemented at least three or more of the new recommendations. Further efforts should be made to inform renal dietitians, as well as general dietitians, about the new ADA CKD guidelines and to make sure that renal dietitians have reasonable case loads and tools needed to make it possible for them to devote time to putting new evidence-based guidelines into practice. However, due to the limited sample size, and inability to achieve statistical significance, this study can only be regarded in terms of the specific sample studied with no opportunity for wider generalization. Future studies could be directed towards general clinical dietitians who may be more likely to work with CKD patients before they begin dialysis. Responses from the population of general clinical dietitians might shed more light on how new ADA CKD guidelines are being utilized by those individuals who work with pre-dialysis CKD patients.

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Thank You...

Our Thanks to the clinical peer reviewer members who made this issue possible:

Desiree DeWaal, MS, RD, CD
Lynn Munson, MS, RD, LD
Mary B. Sundell, RD, LDN, CCRP
Kelly Ziemkiewicz, RD, LD, CDE

Thank You also to:
Amy Hess-Fishl, MS, RD, LDN, BC-ADM, CDE
for providing our test questions

Additional Thanks are extended to:
Megan Sliwa, RD, LDN
RNF Managing Editor
Jackie Abels, MA, RD, LD
Assistant Editor
Cathy M. Goeddeke-Merickel, MS, RD, LD
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