Knowledge of and Patient Care Practices Regarding Oral Health Among Dietitians in Nephrology Care

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Abstract

Background: Oral health screening is part of a nutrition-focused physical exam and can identify nutrition-related problems in patients with chronic kidney disease (CKD).

Objective: To identify knowledge and frequency of performing select patient care practices related to oral health and disease based on a series of questions among Registered Dietitian (RD) members of the Academy of Nutrition and Dietetics-Renal Practice Group (RPG) or National Kidney Foundation–Council on Renal Nutrition (CRN).

Design: Descriptive, prospective internet-based survey.

Participants/setting: RD members of the RPG/CRN who provide nutrition care to individuals with CKD in an ambulatory/outpatient setting. Email invitations were sent to 2614 unduplicated members of the RPG/CRN; 18.8% (n=492) surveys were completed.

Statistical analysis performed: Descriptive statistics, Pearson’s product-moment correlation and Spearman’s rho were conducted; alpha set at p<0.05.

Results: The mean total knowledge score for participants was 65.9% (7.9 out of 12 correct). Weak, positive correlations were found between total knowledge score and: years in clinical practice in nephrology care (r=0.122,p=0.008), the reported frequency of evaluating patient’s medications for risk of causing xerostomia, (r=0.272,p<0.001) and discussing the relationship between blood sugar control and oral health

– Continued on page 3.
with patients/clients with diabetes ($r=0.169, p<0.001$). A moderate, positive correlation was found between total knowledge score and frequency of addressing xerostomia as part of diet/nutrition counseling ($r=0.343, p<0.001$).

**Conclusions:** In this sample of RDs, those who scored higher on knowledge questions were more likely to report performing select patient care practices related to oral health and disease. Future research should address the impact of education/training regarding oral screening on renal dietetics practice.

**Key Words:** Oral health, chronic kidney disease, nutrition assessment, nutrition focused physical exam.

**Introduction**

Nutrition assessment is the first step in the nutrition care process (NCP) (1). Nutrition-focused physical findings are a component of nutrition assessment and can help evaluate an individual’s ability to “obtain, prepare, ingest, and enjoy food” (1,2,3). Nutrition focused physical assessment (NFPA) refers to a combination of information gathered through physical examination, interview, data from the patient’s medical record and laboratory data to determine the optimal nutrition care plan that may or may not have been conducted by the Registered Dietitian (RD) performing the nutrition assessment (4-6). Nutrition focused physical exam (NFPE) refers to the actual conduct of the exam by the RD and includes assessment of nutrition-focused physical findings of the body systems, body composition, vital signs, oral health, and appetite (1,4,5). The purpose of the NFPE is to identify factors that may impact intake, reflect nutrition-related conditions or impact nutritional status (4). The Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists in Nephrology Nutrition (SOP/SOPP) recommends that NFPE include evaluation of oral and perioral structures as well as alterations in taste, smell and dentition (2). The Centers for Medicare and Medicaid Services (CMS) Conditions for Coverage outline nutritional parameters and nutrition-related factors that should be addressed when assessing a patient’s nutritional status, including anthropometric data, appetite and oral intake, ability to chew and swallow, medication usage, hydration status, as well as the patient’s attitude, motivation and self-management skills (7). The Academy of Nutrition and Dietetics – Evidence Analysis Library has similar recommendations for conducting the nutrition assessment in patients diagnosed with chronic kidney disease (CKD) (8).

NFPE of the oral cavity includes intra and extra oral screening of the mouth and related structures for non-normal findings and should be included as part of nutrition assessment in patients with CKD (2,9). Oral health screening includes the identification of non-normal findings within or around the oral cavity that may influence dietary intake, reflect possible nutritional deficiencies or swallowing difficulties, and impact nutritional status (1,9). In addition, RDs can identify nutrition-related oral health problems such as ill-fitting dentures, compromised dentition, or presence of soft tissue lesions and incorporate these findings into their intervention and counseling. RDs should also consider oral manifestations of diseases and medications that may affect the oral cavity (10). Collaboration with and/or referral to oral health care providers when necessary, is an important step in nutrition care planning and reflects inter-professional patient care (4,9,10).

The purpose of this study was twofold: 1) to identify knowledge related to oral health and disease on a score on a series of questions, and 2) to determine current patient care practices regarding oral health and disease among RDs practicing in nephrology care who provide nutrition care to individuals with CKD Stages 3-5 or CKD Stage 5 (on dialysis). The hypotheses tested were that there were no relationships between knowledge based on a summed score for a series of questions related to oral health and disease and: 1. years as an RD in clinical practice, 2. years as an RD in clinical practice in nephrology care, and 3. the frequency of addressing non-normal oral health findings as part of diet/nutrition counseling. The relationships between the total knowledge score and select patient care practices regarding oral health and disease were also explored.

**Methods**

**Sample**

The study sample consisted of RDs who were 2012-2013 members of either The Academy of Nutrition and Dietetics- Renal Practice Group (RPG) or National Kidney Foundation – Council on Renal Nutrition (CRN), work in the ambulatory/outpatient setting with CKD patients Stages 3-5 or CKD Stage 5 (on dialysis) and provide nutrition care to an average of at least one adult CKD Stage 3-5 or CKD Stage 5 (on dialysis) patient per week. Permission to email the survey to members was obtained from each organization. Email invitations were sent to 2614 unduplicated members of the RPG and CRN.

**Study Design**

This study was a descriptive, prospective internet email-based survey. Survey Monkey was used to distribute the survey and collect completed surveys (11). Institutional Review Board (IRB) approval was obtained through Rutgers Health Sciences IRB - Newark Campus (formerly the University of Medicine and Dentistry of New Jersey - Newark IRB). Members of the RPG and CRN were sent an initial email with a brief message to inform them about the study with an option to request a paper copy of the survey or choose to opt-out of the survey at that time. The second contact was an email to all members with a brief description of the study, a statement of confidentiality and consent and a link to participate in the study. Non-responders were sent a follow up email two and four weeks after the initial survey invitation. The survey tool questions were adapted with permission from prior studies regarding oral health and disease, and additional questions were developed by the study team (5,12-18). The survey was reviewed by RD experts in nutrition and oral health and RD experts in nephrology care for face and content validity. The survey was then pilot tested with a sample of RDs in nephrology care and modified accordingly.

**Data Analysis**

SPSS software, Version 20.0 was used for data analysis. Descriptive statistics were performed on demographic and professional characteristics, knowledge questions and patient care practices. Pearson’s product moment correlation was used to explore the relationships between total knowledge score on a series of questions related to oral health and disease, years as an RD in clinical practice and years as an RD in clinical practice in nephrology care.
Spearman’s Rho was used to determine the relationship between total knowledge score on a series of questions related to oral health and disease and select patient care practices. An estimated sample size of 260 RDs was required to achieve statistical power. A priori alpha level of \( p < 0.05 \) was considered statistically significant.

**Results**

The initial email with survey link was sent to 2614 RDs through the Survey Monkey website. A total of 656 members of the RPG/CRN responded to the survey, 93 respondents answered “no” when asked if they see patients with CKD Stages 3-5 or CKD Stage 5 (on dialysis) in an outpatient/ambulatory setting and therefore did not meet study inclusion criteria. The remaining surveys were reviewed for completeness: those who completed less than 50% of the knowledge questions were excluded from data analyses. A total of 492 surveys were considered usable with a final usable response rate of 18.8%.

The mean age of respondents was 47.9 years (median=50.0, range=24.0-83.0, SD=12.06, \( n=444 \)). The majority of respondents were female 97.5% (\( n=460 \)). The mean numbers of years working as an RD in clinical practice was 20.3 years (median=20.0, range=1.0-50.0, SD=1.52, \( n=468 \)). The mean number of years working as an RD in clinical practice in nephrology care was 12.1 years (median = 10.0, range =1.0-39.0, SD=9.33, \( n=472 \)). Table 1 summarizes respondent educational characteristics.

<table>
<thead>
<tr>
<th>Highest Level of Education</th>
<th>( n )</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors degree</td>
<td>266</td>
<td>56.0%</td>
</tr>
<tr>
<td>Masters degree</td>
<td>204</td>
<td>42.9%</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>5</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

Graduate Degree in Relation to RD Credential (\( n=209 \))

- I completed my degree prior to earning my RD credential | 66 | 31.6%
- I completed my degree at the same time as earning my RD credential | 54 | 25.8%
- I completed my degree after earning my RD credential | 89 | 42.6%

Note: Graduate includes doctoral and masters degree

The advanced/specialist certifications reported by respondents are summarized in Table 2. The most frequently reported certification was the Board Certified Specialist in Renal Nutrition (CSR); of those who responded (\( n=412 \)), 22.6% reported having the CSR credential (\( n=93 \)).

<table>
<thead>
<tr>
<th>Advanced/Specialist Certifications Held by Respondents</th>
<th>Yes (( n ))</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR – Board Certified Specialist in Renal Nutrition (( n=412 ))</td>
<td>93</td>
<td>22.6%</td>
</tr>
<tr>
<td>CDE – Certified Diabetes Educator (( n=392 ))</td>
<td>39</td>
<td>9.9%</td>
</tr>
<tr>
<td>CNSC/CNSD – Certified Nutrition Support Clinician/Certified Nutrition Support Dietitian (( n=385 ))</td>
<td>10</td>
<td>2.6%</td>
</tr>
<tr>
<td>FADA – Fellow of the American Dietetic Association (( n=379 ))</td>
<td>4</td>
<td>1.1%</td>
</tr>
<tr>
<td>CSO – Board Certified Specialist in Oncology Nutrition (( n=379 ))</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>CSG – Board Certified Specialist in Gerontological Nutrition (( n=379 ))</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>CSP – Board Certified Specialist in Pediatric Nutrition (( n=378 ))</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>CSSD – Board Certified Specialist in Sports Dietetics (( n=378 ))</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>BC-ADM – Board Certified – Advanced Diabetes Management (( n=378 ))</td>
<td>1</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

(Percentages reflect the percent of those individual who selected yes for the credential out of those who responded to the question, therefore percentages do not = 100%)

The majority of respondents (87.2%, \( n=416 \)) reported patients with CKD Stage 5 (on dialysis) as their primary patient population. Eighty-eight percent (\( n=421 \)) of respondents reported that they worked in a dialysis center (Table 3). Among those who worked in a dialysis center, 61.1% (\( n=256 \)) reported working for a for profit dialysis center/chain (Table 3).

<table>
<thead>
<tr>
<th>Dialysis Center Employment Pattern of Respondents (( N=477 ))</th>
<th>( n )</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work in Dialysis Center Yes</td>
<td>421</td>
<td>88.3%</td>
</tr>
</tbody>
</table>

Type of Dialysis Center (\( n=419 \))

- For profit dialysis center – (chain) | 256 | 61.1%
- For profit dialysis center – (independent) | 29 | 6.9%
- Not-for-profit dialysis center | 49 | 11.7%
- Hospital based outpatient dialysis center | 79 | 18.9%
- Government dialysis center | 3 | 0.7%
- Other | 3 | 0.7%

There were 2 missing responses for Type of Dialysis Center.

The knowledge score was calculated by summing the number of correct responses to a series of 12 multiple choice questions regarding NFPE and structure of the oral cavity, cariogenicity, diet, oral hygiene, periodontal disease, xerostomia and oral manifestations of systemic...
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Table 4: Results for Percent Correct for Multiple Choice Knowledge Questions (N=492)

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Question Stem</th>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal gingiva is:</td>
<td>464</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>Edentulism is defined as:</td>
<td>396</td>
<td>96</td>
</tr>
<tr>
<td>3</td>
<td>Cariostatic foods are defined as foods or drinks that:</td>
<td>143</td>
<td>349</td>
</tr>
<tr>
<td>4</td>
<td>Which of the following foods is considered cariogenic?</td>
<td>264</td>
<td>228</td>
</tr>
<tr>
<td>5</td>
<td>Which of the following is an appropriate recommendation for prevention of dental caries?</td>
<td>350</td>
<td>142</td>
</tr>
<tr>
<td>6</td>
<td>Xylitol containing gum is considered:</td>
<td>227</td>
<td>265</td>
</tr>
<tr>
<td>7</td>
<td>While performing an intraoral screening, if the RD sees any oral lesions, s/he should also assess:</td>
<td>285</td>
<td>207</td>
</tr>
<tr>
<td>8</td>
<td>Which of the following is the most frequent oral complaint of individuals with chronic kidney disease?</td>
<td>336</td>
<td>156</td>
</tr>
<tr>
<td>9</td>
<td>Which of the following medication classes can cause xerostomia?</td>
<td>332</td>
<td>160</td>
</tr>
<tr>
<td>10</td>
<td>Which of the following is a consequence of xerostomia?</td>
<td>405</td>
<td>87</td>
</tr>
<tr>
<td>11</td>
<td>When compared to individuals without diabetes, those with diabetes and poor glycemic control more often have:</td>
<td>421</td>
<td>71</td>
</tr>
<tr>
<td>12</td>
<td>Periodontal disease is defined as:</td>
<td>269</td>
<td>223</td>
</tr>
</tbody>
</table>

Bold type indicates the highest frequency for each question.

Table 5: Reported Frequency of Performing Select Patient Care Practices by Respondents

<table>
<thead>
<tr>
<th>Patient Care Practice</th>
<th>Always</th>
<th>Most of the Time</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you address non-normal oral health findings as part of diet/nutrition counseling for patients/clients? (n=475)</td>
<td>42</td>
<td>110</td>
<td>161</td>
<td>120</td>
<td>42</td>
</tr>
<tr>
<td>How often do you evaluate a patient’s medications for risk of causing xerostomia? (n=476)</td>
<td>14</td>
<td>43</td>
<td>130</td>
<td>170</td>
<td>119</td>
</tr>
<tr>
<td>How often do you discuss the relationship between blood sugar control and oral health with patients/clients who have diabetes? (n=476)</td>
<td>37</td>
<td>85</td>
<td>131</td>
<td>129</td>
<td>94</td>
</tr>
<tr>
<td>How often do you address xerostomia as part of diet/nutrition counseling for patients/clients? (n=474)</td>
<td>43</td>
<td>115</td>
<td>137</td>
<td>92</td>
<td>87</td>
</tr>
<tr>
<td>When you identify patients with non-normal oral health findings, how often do you refer them to a dentist? (n=475)</td>
<td>94</td>
<td>135</td>
<td>114</td>
<td>71</td>
<td>61</td>
</tr>
</tbody>
</table>

Bold type represents the most frequent responses for each question.

diseases. Each correct response was given one point. Questions that were left unmarked were considered incorrect. There was no significant difference in the median score for those respondents who answered all 12 of the knowledge questions and those who did not answer 100% of the questions. Therefore, all surveys with 50% or more of the questions answered were included. The mean number of correctly answered questions for all respondents (n=492) was 7.9 out of a possible 12, (median=8, range =1-12, SD=2.10). The mean knowledge score percentage was 65.9% (median=66.7, range=8.33-100.0%, SD=17.51). The mean number of correctly answered questions by those respondents who answered all 12 multiple choice knowledge questions (n= 456), was 8.1 out of a possible 12, (median= 8, range =1-12, SD= 1.97).

Two percent (n=11) of respondents answered all 12 multiple choice knowledge questions correctly. The response pattern of participants for each question is displayed in Table 4.

Respondents were asked to report the frequency of performing five patient care practices regarding oral health and disease (Table 5). The majority did not report regularly performing the select patient care practices. More than one-third reported “rarely” or “never” addressing non-normal oral health findings as part of diet/nutrition counseling for...
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patients/clients or addressing xerostomia as part of diet/nutrition counseling. Only 25% of respondents reported “always” or “most of the time” discussing the relationship between blood sugar control and oral health with patients/clients who have diabetes.

The relationships between total knowledge score on a series of questions and select demographics were explored using Pearson’s product-moment correlations. No significant relationship was found between total knowledge score and years as an RD in clinical practice. However, there was a weak, positive relationship between total knowledge score and years as an RD in clinical practice in nephrology care (r=0.122, p=0.008), suggesting that as years as an RD in clinical practice in nephrology care increased, there was a small increase in total knowledge score.

As shown in Table 6, there were statistically significant positive correlations between total knowledge score and several patient care practices regarding oral health and disease. Only one practice, addressing xerostomia as part of diet/nutrition counseling was of moderate effect, suggesting that the greater knowledge scores were associated with more frequent counseling on this topic.

**Discussion**

The primary aims of this study were to identify knowledge related to oral health and disease and frequency of performing select patient care practices related to oral health and disease among RD members of the RPG or CRN. The overall response rate to the survey email invitation was 25.1% (n=656) and was similar to the response rate found by others who conducted electronic surveys (5,12). The final number of usable surveys (n=492) exceeded the minimum of 260 responses estimated to achieve statistical power for a small effect size of 0.217, an alpha level of 0.05 at 80% power. Hence, the results may be generalized to the larger U.S. population of RD members of the RPG/CRN.

We failed to reject the null hypothesis concerning the relationship between total knowledge score related to oral health and disease and years as an RD in clinical practice as well as the hypothesis that tested the relationship between total knowledge score related to oral health and disease and the frequency of addressing non-normal oral health findings as part of diet/nutrition counseling as there were no statistically significant relationships found. The null hypothesis regarding the relationship between total knowledge score related to oral health and disease and years as an RD in clinical practice in nephrology care was rejected. Statistical analysis using Pearson’s product-moment correlation revealed a weak, statistically significant relationship, suggesting that those with more years in clinical practice in nephrology care had slightly higher knowledge scores.

The mean total knowledge score for those RDs who participated in this study and answered 50% or more of the multiple choice knowledge questions was approximately 65.9% out of 100%. The content areas that participants answered correctly more often were questions related to food and fluid intake and factors that affect intake (2). RDs should consider to be cariogenic from the list of choices. When RDs are counseling patients with poor oral health it is important to give appropriate food choice recommendations that support promoting oral health.

When asked about the frequency of addressing non-normal oral health findings as part of their nutrition care plan, only 25% reported they “always” or “most of the time” address non-normal oral health findings, how often do you refer them to a dentist? (n=475)

The relationships between total knowledge score related to oral health and disease and frequency of performing select patient care practices regarding oral health and disease. Only one practice, addressing xerostomia as part of diet/nutrition counseling was of moderate effect, suggesting that the greater knowledge scores were associated with more frequent counseling on this topic.

**Table 6: Relationship between Total Knowledge Score and Select Patient Care Practices**

<table>
<thead>
<tr>
<th>Patient Care Practice</th>
<th>Spearman’s rho</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you address non-normal oral health findings as part of diet/nutrition counseling for patients/clients? (n=475)</td>
<td>0.015</td>
<td>0.743</td>
</tr>
<tr>
<td>How often do you evaluate a patient’s medications for risk of causing xerostomia? (n=476)</td>
<td>0.272</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>How often do you discuss the relationship between blood sugar control and oral health with patients/clients who have diabetes? (n=476)</td>
<td>0.169</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>How often do you address xerostomia as part of diet/nutrition counseling for patients/clients? (n=476)</td>
<td>0.343</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>When you identify patients with non-normal oral health findings, how often do you refer them to a dentist? (n=475)</td>
<td>0.051</td>
<td>0.265</td>
</tr>
</tbody>
</table>

* Correlation is significant at p = 0.01 level (2 tailed).
Xerostomia is a common complaint in patients with CKD. The causes of hyposalivation are multifactorial and include side effects of medications, fluid restriction, and poor glucose control in patients with diabetes (23-30). Many patients with CKD take antihypertensive medications as well as other medications such as antidepressants, analgesics, and diuretics that can contribute to feelings of xerostomia and hyposalivation (23,24,27-29). Although 67% of respondents were able to correctly identify that antihypertensive medications can cause xerostomia, over 60% of respondents reported that they “rarely” or “never” evaluate patient’s medications for risk of causing xerostomia. The SOP/SOPP recommends that RDs in nephrology nutrition evaluate all medications and dietary supplements for their impact on nutritional status (2). In addition, although the majority of respondents correctly answered that xerostomia is a frequent complaint by patients with CKD, more than one third of respondents reported “rarely” or “never” addressing xerostomia as part of diet/nutrition counseling. Xerostomia is associated with difficulty chewing and swallowing, oral soft tissue diseases and caries, and can result in increased fluid intake causing undesirable increases in interdialytic weight gains (IDWGs) (23-25,33). It is important that RDs in nephrology care consider all factors that contribute to the complaint of xerostomia and incorporate them into the assessment and counseling of patients/clients.

Patients with diabetes are at greater risk for periodontal disease than those without diabetes, particularly among those who have poor glucose control (25,34). Those with poor glycemic control may complain of xerostomia and experience reduced saliva production more often than individuals in good glycemic control (25,35,36). Although the majority of respondents correctly identified that patients with poorly controlled diabetes often have lower salivary flow, the majority of respondents did not report regularly discussing the role of blood sugar control and oral health with patients/clients who have diabetes. The SOP/SOPP for RDs in nephrology nutrition recommends that RDs address co-morbid conditions such as diabetes and glycemic control as part of the nutrition assessment and intervention (2). The CMS Interpretive Guidelines for dialysis centers also specify that assessment of glycemic control is among the parameters that can be addressed as part of the assessment of nutritional status by the RD and that appropriate counseling should be incorporated into patient care to achieve and sustain nutritional status (7).

The SOP/SOPP and the Position of the Academy of Nutrition and Dietetics on Oral Health and Nutrition both state that RDs should refer to and/or collaborate with health care professionals yet when asked how often the respondent refers patients with non-normal oral health findings to a dentist over 25% reported “rarely” or “never” doing so (2,10). RDs in nephrology care are expected to have an inter-professional focus, practice beyond entry level, and collaborate with other health care professionals (2).

Limitations and Strengths

This study was an internet-based survey distributed through SurveyMonkey via email. Undeliverable emails were a limitation due to invalid or outdated RPG or CRN member email contact information. Some potential participants had previously opted out of SurveyMonkey and others opted out of the survey once the email invitation was sent. The survey was created for this study and was reviewed by experts and pilot tested for face and content validity, but was not tested for reliability. The multiple choice knowledge questions are not intended to reflect a comprehensive knowledge of oral health and disease. The questions regarding the reported frequency of performing patient care practice were based off of a Likert-type scale response and may not accurately represent individual practices. Response bias is possibly a limitation as participants voluntarily accessed and completed the survey.

SurveyMonkey was used for ease of distribution, tracking and sending follow up emails to non-responders. SurveyMonkey only allows submission from emails that are on the invitation list ensuring that only those from the original sample population could complete the survey. The survey link could be accessed at any time and the survey took only 10-15 minutes to complete. Accurate transfer of data to SPSS was feasible with SurveyMonkey and decreased the potential for human error in transcription of data.

Conclusion

The results of this study suggest that although more than 50% of the respondents answered knowledge questions correctly, most RDs in renal clinical nutrition practice do not report integrating oral NFPE practices into patient care. All of the practices that correlated positively with knowledge score were related to counseling and educating patients about NFPE outcomes and not actual performance of a nutrition focused physical exam.

RDs in nephrology care are encouraged to evaluate their current level of knowledge and practices regarding oral health components of NFPE. The patient care practices explored in this study are consistent with the SOP/SOPP for RDs in nephrology nutrition and CMS Conditions for Coverage, hence RDs should conduct NFPE components that include the oral cavity as part of nutrition care. Future research should focus on exploring practice patterns and barriers to performing skills, addressing knowledge deficits related to oral health and CKD and evaluating if additional education and training impacts practice.

References


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