COUNSELING STRATEGIES TO IMPROVE NUTRITION CARE FOR RURAL APPALACHIAN PATIENTS

A Thesis
by
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.

Abstract

COUNSELING STRATEGIES TO IMPROVE NUTRITION CARE FOR RURAL APPALACHIAN PATIENTS

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Chronic diseases are a particular concern for the rural Appalachian population. Culturally sensitive nutrition counseling strategies may help this population overcome barriers to good nutrition and prevent and manage chronic diseases. Qualitative semi-structured interviews were conducted with 36 practitioners (registered dietitians and dietetic interns) and 15 rural patients (n = 51) to investigate dietary obstacles faced by rural patients and counseling strategies considerate of the specific needs and environment of the rural population,. These participants, as well as additional respondents, also completed a follow-up questionnaire regarding the same topics (n = 61). Interviews were transcribed and analyzed using coding and grouping of concepts from the data and categorized by themes (NVIVO Qualitative Analysis Software, QSR International, Version 10, 2013). Questionnaires were analyzed using descriptive statistics and t-tests to compare perspectives of practitioners and patients (SPSS Statistics, IBM, Version 20, 2012). Strategy subthemes were categorized into four broader themes from the previously established Rural Nutrition Care Model, including 1) Access & Resources (Budgeting, 18 mentions; Planning, 15 mentions; Resources 15 mentions), 2) Sociocultural Influences (Whole-Family Approach, 24 mentions; Simple Messages, 19 mentions; Building Rapport & Relationships, 18 mentions; Avoiding

Assumptions & Judgment, 13 mentions), 3) Traditional Foods (Gardening, 20 mentions; How to Cook, 12 mentions), and 4) Health Behaviors (Small Changes, 20 mentions; Prevention, 10 mentions). Questionnaire results indicated that practitioners and patients did not always share the same view of the nutrition context of the rural population (P values compared to $P < 0.05$). The combination of interview and questionnaire data provided valuable insights regarding the success of various nutrition counseling strategies with sensitivity to the cultural framework of the rural population.

Dedication

I dedicate my thesis work to my family and friends. A special feeling of appreciation to my parents, Samuel and Nanette Marchetti, and brother, Marion Marchetti, for their loving support and encouragement. I also dedicate this thesis to Jeff Krissek in deepest gratitude of his unflagging affection and belief in me. Finally, heartfelt thanks to those who have shared with me their dear friendship.

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Foreword

Chapter 2 of this thesis will be submitted to the *Journal of the Academy of Nutrition and Dietetics,* a peer-reviewed journal published by Elsevier; it has been formatted according to the style guide for that journal.

CHAPTER 1: INTRODUCTION

Rural culture plays a role in how members of the rural population understand, receive, and access health care. Cultural differences can lead to differing interactions with health care systems from individuals of various cultures. However, health care systems generally use the same protocol-based approach for all patients. As Farmer, et al., stated in their research of culture and rural health, "Incorporating understanding that there are different cultural beliefs about health and illness into the health care system is challenging. Practitioners' first response is likely to be that the clients' beliefs conflict with the system rather than vice versa."[1] Thus, the culture with which an individual identifies impacts the ways in which they comprehend and use health care. A more thorough understanding of rural Appalachian culture can help to better serve this rural population in terms of health care. Various aspects of Appalachian culture influence how Appalachian people in particular access and receive health care. As Susan Keefe described, "…core values associated with Appalachian culture include egalitarianism, independence and individualism, personalism, familism, a religious world view, neighborliness, love of the land, and the avoidance of conflict."[2] Violation of cultural norms may create a barrier to members of the rural Appalachian culture for access or receipt of adequate health care.

Chronic diseases are a particular concern for the rural Appalachian population. Past research has shown that obesity, diabetes, heart disease, and cancer are problematic in the Appalachian region.[3,4] Behaviors that are unhealthy, such as tobacco use, lack of physical activity, and poor dietary patterns are common in Appalachia. These factors contribute to

high rates of lung and other cancers, as well as obesity. Diabetes is also inversely associated with significant economic disparities common throughout Appalachia.[3] With these chronic diseases presenting such significant problems for rural Appalachian people, health care is of high importance.

Despite the obvious need for access to quality health care for members of the rural Appalachian population, many in the rural population are often underserved. As stated in an article from Behringer and Friedell, "The challenge in Appalachia is to build a set of cancer care services realistic for rural settings while ensuring access to highly specialized services at regional centers."[4] Additionally, those members of the rural Appalachian population who have diabetes may experience difficulty in finding and accessing health care providers for their condition due to lack of availability of Certified Diabetes Educators and registered dietitians.[5] In addition to inadequate access to specialized health care in rural Appalachia, research has shown that healthy eating policies are lacking in rural schools.[6] This is likely to contribute to future lack of healthy eating behaviors in children, and as a result, perpetuate the issue of increased health care needs for rural Appalachians, coupled with the limited access to adequate health care in the Appalachian region.

The need for better health care for rural Appalachian people necessitates investigation of how to improve health behaviors among this population. Many factors have been shown to play a role in the health behavior of rural Appalachian residents. Cross-sectional surveys of farmers' market customers and primary household food shoppers showed that farmers' market use is indicative of higher fruit and vegetable consumption among eastern North Carolina and the Appalachian region of Kentucky.[7] Zoning ordinances have also been found to be related to health behaviors, shown by research in which zoning ordinances were coded

to determine whether they supported healthful food outlets.[8] A retrospective study of patient charts showed that just a single session of nutrition counseling was an effective strategy for treating type 2 diabetes and cardiovascular disease.[9] There are many avenues by which to affect health behaviors in the rural Appalachian population.

Appalachian residents recognize the need for improved health behaviors and increased quality health care in their region. Previous research with focus groups of Appalachian residents helped to identify their perceptions of healthy eating to guide community programming. Many barriers to healthful eating were identified by participants who suggested programming such as nutrition-focused educational workshops, classes, social support groups, and community gardening to help overcome those barriers.[10] Another focus group with Appalachian women shed light on methods to help educate rural Appalachian residents, focusing on the importance of family and the role of women in promoting health. Results highlighted the need for one-on-one provision of fact-based information presented in a polite and culturally sensitive manner.[11] These past studies provide insight as to where dietitians can make the most impact in working with this rural culture.

While some research has been published on the health behaviors of rural Appalachian residents and how to potentially help this population improve their health behaviors, the research is minimal and provides little in the way of definitive recommendations for counseling the population in question. Thus, this research will further investigate barriers to good nutrition and nutrition care as perceived by members of the rural Appalachian community as well as practitioners who work with them in order to discover specific strategies which have been useful in the past. Additionally, this research sought to identify

practical strategies to overcome those barriers on an individual basis, with sensitivity to culture, in order to improve overall health of rural Appalachian residents.

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CHAPTER 2: ARTICLE

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Abstract

Background. Chronic diseases are a particular concern for the rural Appalachian population. Culturally sensitive nutrition counseling strategies may help this population overcome barriers to good nutrition and prevent and manage chronic diseases.

Objective. The purpose of this research was to investigate barriers to good nutrition and nutrition care as perceived by members of the rural Appalachian community, and practitioners who work with them, in order to discover specific, practical, and culturally-sensitive strategies for overcoming these barriers on an individual basis.

Design. This study used a mixed methods design of 1) qualitative semi-structured interviews conducted with 36 practitioners (registered dietitians and dietetic interns) practicing and training in rural settings and 15 rural patients (n = 51) and 2) follow-up questionnaires regarding the same topics (n = 61).

Data Analysis. Interviews were transcribed and analyzed using coding and grouping of concepts from the data and categorized by themes (NVIVO Qualitative Analysis Software, QSR International, Version 10, 2013). Questionnaires were analyzed using descriptive statistics and t-tests to compare perspectives of practitioners and patients (SPSS Statistics, IBM, Version 20, 2012).

Results. Strategy subthemes were categorized into four broader themes from the previously established Rural Nutrition Care Model including 1) Access & Resources (Budgeting, 18 mentions; Planning, 15 mentions; Resources 15 mentions), 2) Sociocultural Influences (Whole-Family Approach, 24 mentions; Simple Messages, 19 mentions; Building Rapport & Relationships, 18 mentions; Avoiding Assumptions

& Judgment, 13 mentions), 3) Traditional Foods (Gardening, 20 mentions; How to Cook, 12 mentions), and 4) Health Behaviors (Small Changes, 20 mentions; Prevention, 10 mentions). Questionnaire results indicated that practitioners and patients did not always share the same view of the nutrition context of the rural population (*P* values compared to $P < 0.05$).

Conclusions. This research indicated the need for culturally sensitive nutrition counseling strategies for rural Appalachian patients.

Introduction

Rural culture plays a role in how members of the rural population understand, receive, and access health care.[1] A more thorough understanding of rural Appalachian culture can help to better serve this rural population in terms of health care.[2] Violation of cultural norms may create a barrier to members of the rural Appalachian culture for access or receipt of adequate health care.

Chronic diseases are a particular concern for the rural Appalachian population. Past research has shown that obesity, diabetes, heart disease, and cancer are problematic in the Appalachian region.[3,4] Since these chronic diseases present such a significant problem for rural Appalachian people, health care is of high importance.

There are many avenues through which to affect health behaviors and health care in the rural Appalachian population. Focus groups with Appalachian residents provide insight as to the cultural perspectives on health behaviors where dietitians can make the most impact in working with this rural culture.[5,6]

This research investigated barriers to good nutrition and nutrition care as perceived by members of the rural Appalachian community as well as practitioners who worked with them in order to discover specific, practical, and culturally sensitive strategies to overcome barriers.

Methods

Design

This study utilized a mixed-methods design for the purpose of identifying effective strategies to help individuals in the rural Appalachian community overcome barriers to good nutrition and nutrition care. Phenomenology and focus groups were the main qualitative methods used for this research.[7] Quantitative data were collected using numeric responses to questionnaires.

Sample

Participants were recruited with advertisements at community health facilities as well as through students and preceptors participating in the graduate dietetic internship program associated with the sponsoring institution. Telephone screening was conducted to determine eligibility, explain the interview process, and schedule a meeting for individual interviews.

The participants were comprised of registered dietitians or practitioners practicing in rural areas, dietetic interns being trained in rural areas, and patients who were adults (age $\geq$ 18 years) with a chronic disease who lived in a rural area (territory encompassing less than 2,500 people) for a substantial portion of their life (at least one-third).[8] Several of these participants (10 registered dietitians, 10 dietetic interns, and 10 patients) provided data in the first phase of research, which was analyzed to

identify rural health characteristics related to nutrition care. This information was incorporated into the Rural Nutrition Care Model (See Figure 1). This was expanded for further analysis along with data collected from additional participants (17 practitioners [registered dietitians plus dietetic interns], 24 patients) in the second phase of research. Data from both phases were combined and analyzed to further probe for strategies to overcome the barriers identified in each component of the Rural Nutrition Care Model. Interview data were collected from a total of 51 participants (36 practitioners, 15 patients) and questionnaire data were collected from 61 participants (37 practitioners, 24 patients). All data were considered together when analyzing for the concept of rural nutrition strategies.

Procedures

The student framed the methods for this study with the assistance and guidance of a faculty advisor who was skilled in qualitative research methods. During the first phase of the research, the researchers collaborated to develop a guide for the semi-structured interview from pilot data originating in dietetic intern field notes related to practice in rural populations.[7,9] Four preliminary themes were identified and used to categorize interview questions: access and resources for healthcare and nutrition information, sociocultural influences on food choices, health behaviors, and traditional foods consumed. Open-ended questions in these categories were used for the interview guide (See Table 1), with follow-up questions and remarks to prompt clarification and elaboration. During the second phase of research, the original interview guide was modified to probe further for rural nutrition strategies.

Data collection included two 60-minute focus groups with dietetic interns and 30-60 minute interviews with patients and practitioners. The focus groups and interviews were audio-recorded and transcribed verbatim for analysis. Interviews and transcription occurred simultaneously to facilitate constant comparison among the data and ensure data saturation and inter-rater reliability among investigators. Interviews were completed when data saturation was reached.

Participants were also asked to complete a 40-item questionnaire following their interview. Two questionnaires, one for patients and one for practitioners and interns, were used to gather data about rural health overall as well as specific demographic information about each participant. Both questionnaires asked the same questions worded for the participant group. The questionnaires used Likert scales (1-5) as well as yes/no options for answers to questions in each of the categories of the four preliminary themes. Questionnaire responses indicated general impressions of specific aspects of each theme. Sample questionnaire topics can be found in Tables 3, 5, 7, and 9.

Data Analysis

Descriptive statistics and paired t-tests were used to analyze demographic and rural health questionnaires using SPSS (IBM, Version 20, 2012). Questionnaire data was recoded where necessary so that all questions had numeric responses (‘no’ and ‘yes’ responses were recoded to 1 and 5, respectively). Questions were also recoded so that patient and practitioner responses aligned to the same poles on the Likert scale (For example, where practitioners responded to the statement, “My rural patients may lack knowledge regarding portion size and menu variety,” patients responded to the

statement, “I feel I know a lot of information about portion size and menu variety.” While disagreement was indicated by a response of 1 and agreement by a response of 5, patient responses were recoded so that the numeric response was in line with the amount of perceived knowledge for both questionnaires in order to make them comparable in statistical analysis. Transcribed interviews were reviewed to ensure accuracy. The researchers collaborated to discover patterns in the interview transcripts in order to draw conclusions and reach a consensus on the major indications of the information provided by the data. Data was analyzed to identify themes surrounding nutrition care strategies for rural populations. The transcripts were coded using NVIVO Qualitative Analysis Software (QSR International, Version 10, 2013). During the first phase of research, ideas from the data were grouped according to similarity and categorized by theme. Coding, grouping, and thematic analysis of all transcripts were reviewed and agreed upon by all researchers.[7,9] In the second phase, both the previously gathered data and new data were analyzed for information on strategies to help the rural Appalachian population overcome barriers to good nutrition care. The findings were triangulated from each of the three perspectives (registered dietitian, dietetic intern, and patient) in order to further validate the themes identified.

Results

Registered dietitians (RDs) (n = 17) had experience in practice ranging from 5 months to 40 years (mean = 14.4 years). On average, RDs estimated that 75% of their patients were rural dwellers. Dietetic interns (DIs) (n = 20) were completing their second year of a combined graduate program in nutrition and dietetic internship.

Internship rotations were located in rural areas or urban areas with facilities that provided services to nearby rural locations. Patients (n = 24) ranged in age from 23-80 years (mean = 55 years). All patients had lived in a rural area for at least 22 years. Patients reported chronic diseases, which most frequently included heart disease, diabetes, hypertension, and obesity. One-fourth of patients (n = 6) reported more than one condition, and on average, patients reported 1.25 conditions.

The results from RDs and DIs were very similar and collapsed for analysis. This data is presented collectively and is referred to as "practitioner" results. Results are presented as strategic subthemes within each model component as illustrated in Tables 2-9. A salient finding was the significant differences between practitioners' and patients' responses to questionnaire items, lending further insight to the efficacy of nutrition counseling strategies.

Model Component 1: Access and Resources

Three Strategic subthemes were identified in this model component (See Table 2). The largest subtheme was Budgeting with 18 mentions. Budgeting mentions included indications that patients lacked sufficient money or time to buy and prepare nutritious foods. As one patient described, "Going to the store is time-consuming. It takes a while to get there, depending on how much money you want to spend because the little local grocery store is a little more expensive than one if you were to drive quite a while to get some cheaper rates, yet you're sacrificing time." The remaining two themes in this model component, Planning and Resources, each had 15 mentions. Planning mentions designated that deliberate forethought could help overcome nutrition barriers. One practitioner said, "Teaching them easy ways to cook that food,

like crock pot cooking, a lot of them don't use it, but it's a way that they can, they have 10 minutes at night after they do whatever, throw it in and take it and put it in there in the morning, they have a home-cooked meal. A lot of just some of those easy techniques maybe to having those things that aren't labor-intensive at one given time." Availability of information and services as a counterbalance to barriers were categorized as Resources mentions. "I think the information that I would definitely provide is, 'What do we have available in this area?'" stated a practitioner.

Questionnaire items related to this model component provide greater comprehension of how to go about developing strategic approaches to counseling rural patients (See Table 3). Practitioners and patients disagree about the availability of full-service grocery stores ($P \leq 0.000$). Practitioners felt that their rural patients often experienced limited access to full-service stores, while patients indicated that they usually had a full-service grocery store within 20 miles of their home. Additionally, patients and practitioners thought differently about the ease of transportation ($P \leq 0.000$). Patients reported that they did not have trouble arranging transportation, but practitioners indicated that this was often a struggle for their rural patients. Disagreement was also seen in responses to questionnaire items regarding health insurance. Practitioners perceived that their rural patients were less likely to have health insurance, while most patients reported having health insurance ($P = 0.000$).

Model Component 2: Sociocultural Characteristics

The Strategic subthemes identified in this model component focused mainly on effective nutrition education methods (See Table 4). The theme with the most

mentions, 24, was Whole-Family Approach. This theme encompassed the idea that many rural families have matriarchal gatekeepers who purchase and prepare food, and other members of the family often exert pressure on the matriarchal figure to purchase and prepare favorite, desired, and frequently unhealthy foods. A patient explained, “We don’t have enough money to buy two things like for healthy food and his food. He is not interested in changing his lifestyle at this moment.” The Whole-Family Approach to nutrition education would help to align the goals of all family members when it comes to food. The second most-mentioned theme in this model component was Simple Messages, with 19 mentions, a theme that emphasized the importance of streamlining nutrition education to avoid confusion and over-complication. A practitioner stressed the significance of “making sure that they know that they don’t have to change everything at once. You’re focusing on one thing that might be a little bit easier, and if there’s more visits, you can work on other things later.” Building Rapport and Relationships, mentioned 18 times, indicated that a level of trust and familiarity between patients and practitioners would enable greater nutrition education by increasing the level of comfort of the patient. “It was kind of embarrassing that I would have a problem that I would have to go to someone to teach me how to eat,” explained a patient. Similarly, although somewhat differing, was the theme of Avoiding Assumptions and Judgment with 13 mentions. This theme captured the idea that a practitioner may not understand why a patient engages in their nutrition behaviors or habits, and thus must allow space to try to understand the individual. A practitioner suggested, “Trying to meet them where they are and not being judgmental, taking anything they say as an appropriate answer, you know, so I

don't look shocked and make them think that they said something to me they shouldn't."

Combining this information with results from the questionnaire creates a larger basis for consideration of strategy improvement in the Sociocultural Influences model component (See Table 5). Patients and practitioners agreed that most households have a matriarchal gatekeeper, a woman who oversees the entrance of food into the home by handling the responsibility of doing the grocery shopping (P = 0.117). However, whereas practitioners thought women cooked most of the meals, patients indicated this was not necessarily the case (P = 0.045). With regard to the need for lower literacy education materials, practitioners believed these materials were necessary while patients did not ($P \leq 0.001$). When working to build rapport and relationships, practitioners felt that they needed to make up ground because they felt that rural patients did not trust outsiders. In contrast, patients indicated an overall disagreement to that statement ($P \leq 0.001$).

Model Component 3: Traditional Foods

Strategic subthemes in this model component were Gardening, with 20 mentions, and How to Cook, with 12 mentions (See Table 6). These subthemes reflect a return to eating patterns reminiscent of the past that included production and preparation of food in the home. With regards to the subtheme of Gardening, a patient expounded, "I was raised in these mountains, back up in the mountains, and we always had fresh food. It was something that comes natural, even canning to this day for me. I think it's a great area to live, a great area to raise fruits and vegetables. We're trying to get an orchard started on the farm we're at now, that type of thing. I

want some black raspberries and strawberries, and that type of thing. And teach my grandchildren the same thing." The subtheme of How to Cook was reflected in a patient's expression of interest in tips from a dietitian: "Set up some invitations to try some foods and clinics, have a clinic and do some cooking in front of the people and teach them the difference between what you put in the vegetables and what you don't put in, you know, like fat back or something where it's more nutritional. And then indicate why it's better for them."

Questionnaire responses reinforce nutrition counseling strategies in this model component (See Table 7). Practitioners perceived a moderate commonality that their rural patients grew their own food, but very few patients reported growing their own food ($P \leq 0.001$). Teaching healthy cooking methods is also supported by questionnaire results. Patients' questionnaire results showed that they did not cook with high-fat products with high frequency, while practitioners indicated regularity of high-fat cooking methods used by their rural patients ($P \leq 0.001$). Practitioners identified a higher level of importance of traditional family foods in the lives of their rural patients than the patients themselves did ($P \leq 0.001$).

Model Component 4: Health Behaviors

Two Strategic subthemes comprised this model component (See Table 8). The first is Small Changes with 20 mentions. Small Changes indicate actions that patients can choose to take to begin progressing from their current state to a state of improved health and nutrition. A key part of Small Changes is that the practitioner allows the patient to determine what degree of change seems manageable. A practitioner explained, "Take small steps… it may take you longer but it'll keep you focused."

The second theme in this model component, mentioned 10 times, is Prevention, which shows that helping patients to improve their nutrition prior to the onset of nutrition-related disease may allow the patient to sidestep the disease altogether and avoid remedial treatment or management of the disease in the future. “Oftentimes I hear the quote, “Well, everybody’s going to die from something,” and as a result of that, they continue with their same dietary patterns without really thinking about the consequences,” said a practitioner.

Within this model component, questionnaire results lend credence to the qualitative analysis findings (See Table 9). While patients disagreed with practitioners about the rural population’s lack of knowledge of a healthy lifestyle ($P \leq 0.001$), both parties reported that overweight and obesity were common among the rural population ($P = 0.603$). Patients and practitioners strongly agreed that rural patients tend to wait to seek medical attention until a condition becomes advanced ($P = 2.051$). Patients were more likely than practitioners to indicate adequate access to nutrition education and dietitian services for rural patients ($P = 0.002$).

Discussion

The purpose of this research was to investigate barriers to good nutrition and nutrition care as perceived by members of the rural Appalachian community as well as practitioners who work with them in order to discover specific, individualized, and culturally sensitive strategies to overcome those barriers. Considering the four components of the Rural Nutrition Care Model (See Figure 1) – Access & Resources, Sociocultural Characteristics, Traditional Foods, and Health Behaviors – several

nutrition counseling strategies have been identified to help individuals overcome barriers.

In the realm of Access & Resources, the present study revealed strategies used by practitioners to help patients surmount barriers. Practitioners indicated that strategies focused on budgeting, planning and resources, and increasing awareness of community resources were the most important in assisting patients to make the most of what they have available. This aligns with previous research that has indicated that structure such as grocery stores, available variety, and forced travel may be inhibitive to good nutrition for rural residents. Prior research also indicated that social networks can help raise awareness of resources such as sales and health fairs with free checkups.[10] Thus, strategies used to increase community-wide knowledge of means by which to overcome barriers can be improved by reaching a smaller number of individuals who can facilitate the sharing of this information. Additional research has shown that fast foods are increasingly available in nontraditional fast-food outlets such as convenience stores and grocery stores in rural areas highlighting the need to teach patients how to make better nutrition choices with the increased availability of fast foods.[11]

Questionnaire results regarding availability of full-service grocery stores and transportation showed that considering whether the norm for rural patients includes extensive sharing of vehicles and planning carpooling trips could provide an explanation for this difference. These discrepancies indicate a need for strategies that focus not necessarily on making stores available within easy travelling distance, but on how to take advantage of the access to full-service grocery stores when patients

are able to visit the stores. Additional questionnaire discrepancies on insurance topics illustrated that, while many rural patients are insured, their needs may not all be covered, and many likely still lack coverage altogether. Thus, continuing to make rural patients aware of community resources where they can find health assistance remains an important strategy.

Within the model component of Sociocultural Characteristics, the present research unveiled strategies used by practitioners to connect with their patients and share messages. Strategies to reach patients included using a whole-family approach, simple messages, building rapport and relationships, avoiding assumptions and judgment, and interactive learning. The goal of these strategies is to work within rural social contexts including matriarchal gatekeepers, distrust of outsiders, and necessity of low-literacy education materials. These strategies are supported by earlier research indicating greater effectiveness of messages from healthcare professionals when those messages are presented with due diligence given to the following: rapport; privacy; values, beliefs, and customs; literacy needs; and family characteristics of patients.[12]

Questionnaire results on topics of matriarchal gatekeeper and women cooking lend credence to the Whole-Family Approach of nutrition counseling, indicating that if the matriarchal gatekeepers are aware of the nutritional needs of the other family members, they will be more likely to purchase appropriate foods. Subsequently, once in the home, food can be healthfully prepared by any family member. The questionnaires also highlighted an inconsistency in perception of need for lower literacy education materials that could be indicative of the existing use of low-literacy education materials that has, from the perspective of the patient, masked the necessity

of those low-literacy education materials because patients are not aware that the materials are simplified. Although educational attainment for rural populations has improved, there still remains approximately 17% of the rural population over the age of 25 years who has not earned a high school diploma, reinforcing the need for low-literacy nutrition education materials.[13] Another contradiction found in questionnaire data was on the level of trust of outsiders. Perhaps this discrepancy is best reconciled by the idea that members of the rural population may trust outsiders if they are met in the community, yet might have a different attitude toward health care practitioners. If this is the case, persistence on the part of practitioners to build strong rapport and relationships with their patients is of high importance as a nutrition counseling strategy.

This study has brought to light strategies within the component of Traditional Foods that may be effective for accommodating the food preferences of rural patients while improving the nutritional value of those foods. Encouraging gardening and teaching healthful cooking methods may help rural patients make better food choices while continuing to incorporate traditional foods that are culturally meaningful. Reviving the cultural heritage of foods such as traditional vegetable dishes may be a potentially strong motivator for dietary behavior changes. Past research indicates that community-based interventions in which the target population participates in the intervention by helping develop the means of intervention is likely the most effective way to facilitate implementation of nutrition changes.[14] Additionally, the messages for these changes are most effectively shared if they are tailored to the population rather than presented as threatening messages related to the consequences of poor

health behaviors.[15] It is important to keep these factors in mind when making recommendations that are culturally sensitive to food traditions and worthwhile for patients to incorporate into their lifestyles.

Conflicting questionnaire results on the topic of self-provision of food showed that encouragement of growing even a little of one's own food is a useful nutrition counseling strategy. Also, data from questionnaires regarding high-fat cooking methods and importance of traditional family foods indicated that teaching healthier cooking methods through minimization of the use of high-fat products and improving the nutritional value of family favorite recipes validate How to Cook as a nutrition counseling strategy. Although patients reported less importance of traditional recipes than practitioners perceived, the ability to prepare these foods using healthful techniques would still benefit patients.

In the Health Behaviors constituent of the Rural Nutrition Care Model, key strategies became prominent through analysis. Small changes and prevention were the most noticeable strategies. These methods were predicated on the questionnaire results that indicated the recognition by both patients and practitioners that overweight and obesity are widespread throughout the rural population and that rural patients are likely to wait to seek medical attention. The identified methods are also supported by the disconnect between the perspectives of patients and practitioners regarding community knowledge of healthy lifestyles and access to nutrition education resources. Making small changes enabled through mentoring by peers can improve preventative health behaviors.[16] Additionally, working with the existing paradigm held by the population regarding what constitutes health and working to

more closely align that concept of health with a biomedical model is likely to open the door to altering health behaviors of rural patients. Rural Appalachian patients view health as the ability to function in the community rather than just avoiding illness.[17] Thus, relating particular diet changes to specific health outcomes may help this population recognize the role of good nutrition in maintaining functionality in a community.

Inconsistencies demonstrated by patients in questionnaire results related to knowledge of healthy lifestyles and rate of overweight and obesity in the rural population indicate that perhaps patients in the rural population are aware of what a healthy lifestyle should be, but are uncertain of how to incorporate healthy behaviors into their own lives. Using the Small Changes subtheme to inform a nutrition counseling strategy can help patients move toward a healthier lifestyle in ways that are tailored to the individual to make the adjustment manageable for them. This reinforces prevention as a nutrition counseling strategy for which a need is highlighted in the questionnaire results. Questionnaire data on two items, delay in seeking medical attention and adequacy of access to nutrition education and dietitian services for rural patients, when considered together, illustrate the possibility that even though patients feel they have access to nutrition education and dietitian services, they are not necessarily aware of how this relates to their health and the prevention of medical conditions they may face.

While this study included a small number of participants, as is characteristic of qualitative research, the participants were carefully selected as key informants to provide an accurate, insightful depiction of the rural Appalachian culture as it pertains

to nutrition and nutrition care. The triangulation of the results from registered dietitians, dietetic interns, and patients also provided a strong basis to this study. Since this research was focused on the Appalachian area, the results may not be generalizable to all rural populations.

Conclusions

This research indicates a need for culturally sensitive nutrition counseling strategies for rural Appalachian patients. The differing perspectives from which patients and practitioners approach nutrition counseling can be reconciled with strategies that help to move those perspectives closer together for optimal communication that facilitates positive changes. Further research is needed to demonstrate the applicability of this model to other rural populations. In order for these strategies to take hold, increased access to and awareness of registered dietitians may need to take place first. There is a need for registered dietitians in rural areas, and improved community outreach and accessibility may help to bridge the gap between patients and nutrition care. Lastly, the reach of this study was not far enough to capture the extremely rural population that is isolated due to lack of transportation, severe distrust, inadequate access to resources, or other reasons. Improved access to nutrition care for those who are isolated could have a ripple effect of incorporating culturally sensitive nutrition counseling strategies with the rural population as a whole.

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Figure 1. Rural Nutrition Care Model

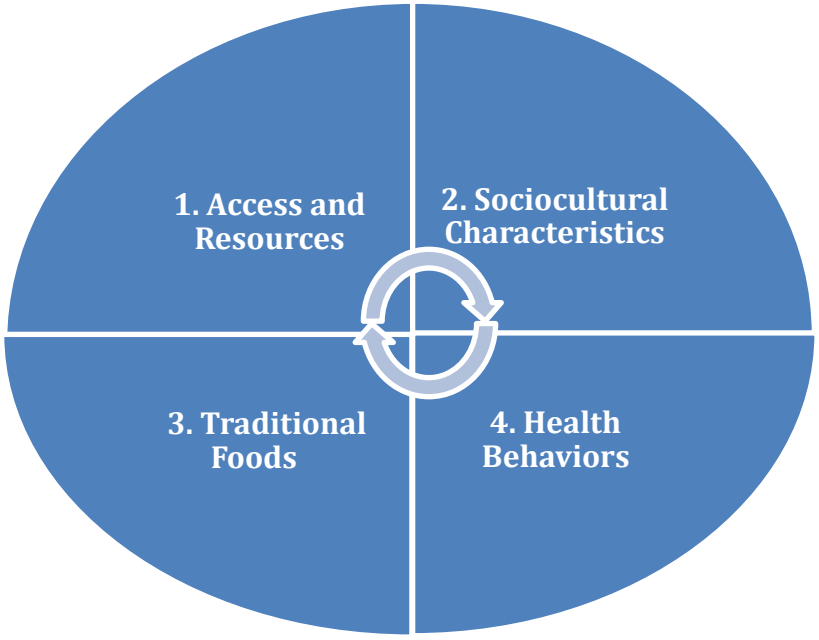

Table 1. Semi-Structured Interview Questions

1	Tell me about your experiences in delivering nutrition care to rural patients.
2	Are there any foods or food terms that you have found to be unique to your rural patients?
3	Is gardening common among rural patients? What kinds of foods do they grow?
4	What particular nutrition-related diseases do you see as most common among the rural population?
5	What do you see as barriers to preventive care for rural patients?
6	Is substance abuse common among the rural population?
7	How does religion play into the delivery of nutrition care to rural patients?
8	If you were putting together a presentation or workshop of some sort for rural patients, what sort of information would you provide? What would you want to teach them?
9	What particular strategies do you find most useful in counseling rural patients?
10	Is storytelling typical for rural patients?
11	Do rural patients seem to have any problems with water and food safety?
12	Have you noticed with rural patients any problems with having consistent access to adequate cooking equipment like stoves/ovens, and refrigerators?

Table 2. Counseling Strategies Identified within Access & Resources Model Component

Subtheme	Strategy
Budgeting *(18 mentions)*	Teach tips & tricks for saving money
Planning *(15 mentions)*	Teach how to plan healthy meals and shop ahead
Resources *(15 mentions)*	Help patients find local organizations or opportunities that will work for them

Table 3. Rural Nutrition Questionnaire Results from Patients and Practitioners for Access & Resources Model Component

Questionnaire Topic: Rural Patients…	Practitioner Response Mean (SEM)	Patient Response Mean (SEM)
are less likely to have health insurance*	3.74 (0.17)	1.17 (0.17)
have difficulties arranging transportation*	4.09 (0.15)	1.00 (0.00)
lack of access to full-service grocery store*	3.69 (0.19)	1.33 (0.23)
lack access to utilities, refrigeration, etc.*	3.31 (0.20)	1.00 (0.00)
lack prescription drug coverage*	3.80 (0.18)	1.33 (0.23)
lack dental insurance*	4.09 (0.16)	2.33 (0.39)
lack of access to mental health services*	4.06 (0.15)	1.33 (0.23)
have lower cost of living*	3.49 (0.18)	2.71 (0.26)

* $P < 0.05$: statistically significant difference indicates disagreement between practitioners and patients

Table 4. Counseling Strategies Identified within Sociocultural Characteristics Model Component

Subtheme	Strategy
Whole-Family Approach *(24 mentions)*	Counsel multiple family members together
Simple Messages *(19 mentions)*	Use layman's terms and teach to the patient's level of understanding
Building Rapport & Relationships *(18 mentions)*	Listen to the patient, express sensitivity to their emotional needs, and perform professionally
Avoiding Assumptions & Judgment *(13 mentions)*	Remain open to learning about the individual and their unique situation

Table 5. Rural Nutrition Questionnaire Results from Patients and Practitioners for Sociocultural Characteristics Model Component

Questionnaire Topic: Rural Patients/Families…	Practitioner Response Mean (SEM)	Patient Response Mean (SEM)
need lower literacy education materials*	3.86 (0.15)	1.33 (0.14)
prioritize quantity over quality*	4.34 (0.14)	1.79 (0.23)
Have a matriarchal gatekeeper**	4.20 (0.18)	3.67 (0.31)
have numerous hospital visitors**	4.11 (0.11)	4.08 (0.15)
view support services & resources as charity*	3.59 (0.21)	2.79 (0.26)
don't trust outsiders*	4.17 (0.14)	2.42 (0.23)
mind their own business**	4.17 (0.14)	3.50 (0.24)
care for their own**	4.17 (0.14)	4.25 (0.21)
are very religious**	4.29 (0.13)	3.63 (0.26)
experience generational rather than situational poverty*	3.86 (0.17)	2.96 (0.27)
have meals fixed by women of the household*	4.43 (0.12)	3.88 (0.28)

* $P < 0.05$: statistically significant difference indicates disagreement between practitioners and patients

** $P \geq 0.05$: statistically insignificant difference indicates agreement between practitioners and patients

Table 6. Counseling Strategies Identified within Traditional Foods Model Component

Subtheme	Strategy
Gardening *(20 mentions)*	Encourage patients to try growing some of their own produce, even just a little
How to Cook *(12 mentions)*	Explain practical cooking tips that patients can easily implement for healthier cooking

Table 7. Rural Nutrition Questionnaire Results from Patients and Practitioners for Traditional Foods Model Component

Questionnaire Topic: Rural Patients…	Practitioner Response Mean (SEM)	Patient Response Mean (SEM)
lack knowledge about portion size and menu variety*	4.46 (0.12)	2.50 (0.23)
use high-fat cooking*	4.54 (0.10)	2.88 (0.22)
value traditional family foods*	4.54 (0.12)	3.71 (0.19)
value family gatherings*	4.46 (0.13)	3.92 (0.22)
put soda in baby bottles*	3.63 (0.21)	1.92 (0.24)
drink a lot of soda*	4.54 (0.11)	2.21 (0.32)
grow their own food*	3.71 (0.18)	0.50 (0.10)

* $P < 0.05$: statistically significant difference indicates disagreement between practitioners and patients

Table 8. Counseling Strategies Identified within Health Behaviors Model Component

Subtheme	Strategy
Small Changes *(20 mentions)*	Guide the patient in choosing small, positive steps to take to move them toward healthier behaviors in a way they feel they can manage
Prevention *(10 mentions)*	Stress the importance of healthy behaviors to prevent health problems later on

Table 9. Rural Nutrition Questionnaire Results from Patients and Practitioners for Health Behaviors Model Component

Questionnaire Topic: Rural Patients…	Practitioner Response Mean (SEM)	Patient Response Mean (SEM)
lack knowledge of healthy lifestyle*	3.89 (0.17)	2.23 (0.27)
are often smokers*	3.86 (0.17)	2.23 (0.27)
are often overweight or obese**	3.23 (0.23)	3.05 (0.26)
perceive that cancer is often due to farming chemicals*	3.13 (0.16)	2.18 (0.24)
wait to seek medical attention**	3.93 (0.14)	3.36 (0.26)
have adequate access to nutrition education & dietitian services*	2.00 (0.18)	2.95 (0.23)

* $P < 0.05$: statistically significant difference indicates disagreement between practitioners and patients

** $P \geq 0.05$: statistically insignificant difference indicates agreement between practitioners and patients

VITA

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