

ORIGINAL RESEARCH

EXPLORING CENTENARIANS' PERCEPTION OF NUTRITION

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Abstract: *Background/Objective:* Centenarians' dietary habits have been associated with healthy aging, although it is centenarians' perceptions about their diet that influence what they eat and in what amounts. However, there is little research on centenarians' viewpoints about their past and current eating patterns and their impact on centenarians' current nutritional status. Thus, this study explored the perceptions about lifetime dietary habits of community-dwelling Appalachian centenarians. *Design:* A qualitative descriptive design. *Setting:* Home or the facility where participants lived. *Participants:* A convenience sample of community-dwelling centenarians. *Measurements:* Face-to-face interviews were used. Transcripts were analyzed with the Nuendorf's method of content analysis. *Results:* Emerging themes were source of food, food preferences, food consumption, balanced diet, food preparation & storage, responsibility for nutrition of family, and longevity. *Conclusion:* Centenarians' perceptions about their dietary behaviors need to be considered when adjusting their diets and eating patterns for clinical purposes.

Key words: Centenarians, aging, perception of nutrition, dietary behaviors, determinants of healthy aging.

Centenarians' viewpoints about dietary habits are vital in understanding healthy aging. Nutrition, a determinant of healthy aging, comes from dietary habits, patterns, and behaviors. The use of caloric restriction and a diet high in vegetables and fish were explored in the Okinawan culture/community (1). Worldwide, centenarians' dietary habits have been related to their nutritional status, healthy aging, culture, and social environment (2-3). In areas with a high density of centenarians (the blue zones), their nutritional status and lifestyles have been linked to longevity (4).

Centenarians' viewpoints can be invaluable in understanding their health status (4). However, there is limited research on centenarians' perception about their past dietary habits. The purpose of this study was to explore how community-dwelling Appalachian centenarians in Tennessee perceived the role of nutrition in healthy aging.

Methods

Design

A qualitative descriptive design was used. This design allowed the researchers to explore the depth and richness

of the themes elicited from the narratives.

Instruments

To screen for eligibility, cognitive status was measured with the Short Portable Mental Status Questionnaire (SPMSQ), consisting of 10 questions (5). Each error received 1 point with 3-4 errors indicating mild impairment. The number of allowable errors was adjusted by education. Scores for the SPMSQ have been correlated with a diagnosis of cognitive impairment with a test-retest reliability of .8 or higher (5). It has been validated in older adults (6).

Procedure

Using the Knoxville-Knox County, TN Office on Aging Centenarian Database (n = 40), a convenience sample was recruited. Participants were at least 100-years-old, able to read/speak English, and cognitively intact or no more than mild cognitive impairment. The study was approved by the Institutional Review Board (IRB) at the University of Tennessee-Knoxville. All participants signed an informed consent document.

All centenarians and family contact persons received a letter of introduction with a follow-up telephone call. The original list was reduced to 16 because of death (n = 5) or moderate cognitive impairment (n = 19). Thirteen responded to the letter. Interviews took place in the participant's home or facility. Seven completed the

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interview.

The SPMSQ was administered to determine eligibility. For those who participated, 42.9% ($n = 3$) demonstrated intact cognitive status (0-2 errors) and 57.1% ($n = 4$) had mild impairment (0-5 errors).

Participants responded to open-ended questions about what they ate when growing up. Interviews, averaging 1.5-2.5 hours, were digitally recorded for later transcription.

Data Analysis

The data consisted of demographics and narratives from the interviews. Nuendorf's method of content analysis was conducted on the interview transcripts. Nuendorf's method is a systematic, objective method of content analysis that relies on the scientific method (7). Units of analysis were identified a priori. Researchers independently read the transcripts to itemize units of analysis (coding) for comparison and categorization, which was verified with NVIVO 11.0 (Windows). Saturation was evidenced by repeating units of analysis.

Results

The convenience sample ($n = 7$) consisted of 86% ($n = 6$) females and 14% ($n = 1$) male who were Caucasian, widowed, and overall older than 102 years (mean AGE = 102.7 ± 1.7). Most participants had at least a high school education ($n = 5$, 71.4%), lived in a house ($n = 5$, 83%) lived with someone ($n = 4$, 57.1%), and had a \$30,000/year income ($n = 4$, 57.1%). They were overall healthy BMI (mean BMI = 24.1 ± 4.0), with 1 participant (14.3%) underweight (BMI <18.5), 1 overweight (BMI = 25-29.9), and 1 obese (BMI = 30.0-39.9).

The seven themes relating to diet and nutrition from the narratives were source of food, food preferences, food consumption, food preparation & storage, balanced diet, responsibility for nutrition of family, and longevity.

Source of food related to how and where the food was obtained during childhood. The primary source was the family's farm where produce was gardenized and livestock were raised. Participants indicated that "we used the land to grow food", and "father grew everything". Participants also reported that the land was used to provide milk and meats. "We had a cow for milk" and "we had pigs at home".

Food preferences reflected the type of foods that participants liked to eat during their childhood and continue to prefer. "[I] loved sweet potatoes", "I like bread and butter pickles", "I love vegetables...", and "I like all kinds of fruit". Other favorite foods were "I love soups." "We made potato soup". "What I liked to cook and I used to cook all the time was pies". Participants indicated other foods they like now. "Even when I don't want anything, I could eat Jell-O". "I like milk" and "I like roast beef". Food preferences included their dislikes

or what they would not eat. Participants stated, "I don't go after sweets." "Now, I don't eat fried food except for potatoes." "I have no comfort foods; I eat what I need for energy." When asked "What was your favorite food growing up?" one participant stated, "Everything."

Food consumption was related to food availability (sufficiency of food), eating patterns (when and what was eaten), and food quantity (the amount of food eaten). Regarding availability, "We didn't have much to eat", or "When I lived with my dad, [I ate] bread and milk". "We had plenty of potatoes" or "there was always a chocolate layer cake [in the house] anytime I wanted". Eating patterns involved the participants' perceived effort to establish a way of eating. After overeating, one participant shared that "never would I ever over eat again". This self-monitoring was equally evident in statements like "[I] eat no fried foods except potatoes". Eating patterns impacted the mealtime etiquette because "Kids had to wait until the adults finished eating before they could eat." One participant stated, "I told my kids that there were no choices in the food they could eat. If they did not like something, they were not to say anything about it". Food quantity underscored participants' perceived effort to monitor their eating. Several participants shared that "now, sometimes I don't want anything to eat". One participant shared that "I think we eat too much". I [fix] myself a week's supply of food", or "[I] cook about twice a week".

Food preparation & storage reflected the perception about techniques used to prepare food and how food was stored. One participant explained how to cook favorite foods the Appalachian way. "Put [the pork chop] in the frying pan and brown. Salt and Pepper put it in the oven." "And then of course we made potato soup. You use potatoes and onions...I think that's all and salt and pepper." Others shared that "whatever food was not eaten immediately was either canned or dried," and "apples and potatoes were stored in the basement." Several participants told of the change from pre-electricity storage "We had an icebox" during childhood and now use of modern equipment for storage. "[Now, I] have food in the refrigerator".

Balanced diet underscored the participants' perception about eating to meet their needs. "I have adequate for my needs...energy...and I am satisfied". This participant also advised that the way to make sure you get what you need is to "never overdo anything. Do everything in the right amount". Interestingly, another participant shared that "We didn't even hear anything about balanced meals back then". People ate what they could so that they could continue to live and work. "I don't remember what we ate, but we had plenty."

Responsibility for nutrition of family was indicative of task(s) done growing up to make sure that there was food on the table for the family. Several participants shared that "I had to spend money on food, not candy", "I had a job during the depression and this made it possible for us to eat well", or "I brought home my salary and therefore

helped feed my aunt and three cousins", or "I bought the food". Others did household chores. "I had to cook for the family growing up".

Longevity related to the participants' perception about what played a role in reaching their current age. None of the participants believed that their longevity was due to their diet. Longevity was due to a way of life. "I don't know. I just lived the common life, you know." or "I have to say that's the choice of the Lord." Another said, "Don't worry". "Live a simple life. Be honest...and never overdo anything".

Discussion

This qualitative descriptive study focused on community-dwelling centenarians' perceptions about their nutrition, filling the gap about centenarians' perspectives on nutrition. The seven emerging themes reveal that nutrition is multi-factorial. Centenarians' dietary habits are influenced by past experiences that are related to their diets. Eating patterns are impacted by the measurable availability and quantity of food with tangible practices related to food preparation and storage. Nutrition is interrelated with other determinants of healthy aging and is influenced by a person's perception.

Source of food, food preferences, food consumption, and food preparation & storage provide insight as to why a healthy BMI has been associated with the dietary habits of centenarians. They preferred locally-grown foods, which resulted in a low-fat diet rich in fruits and vegetables with a moderate amount of vegetable-based protein (3, 8). Food sources directly from the local area impact food availability, eating patterns, food quantity, and food preference (5, 8-9). The availability of only locally grown produce contributed to a high consumption of Vitamin A and Vitamin C (1, 8-9). Using cultural norms for food preparation & storage retains local foods' nutritious value such as anti-oxidant properties from olives and olive oil (3) or digestible protein sources like sweet potatoes and soy (8, 9).

Caloric restriction or avoiding overeating by not "overdoing it at mealtime" relates to food consumption, balanced diet, and food preferences. These themes reflect centenarians' perception of their dietary habits, which reduce the risk for diabetes and high blood pressure (8).

Source of food, balanced diet, food consumption, and responsibility for nutrition of family include the number of meals perceived to be needed for energy requirements. Okinawan centenarians only had 2 daily meals (4) whereas Appalachian centenarians had 3 meals a day.

For European centenarians, a balanced diet included a sufficient lunch meal (3). The context of balanced diet is eating the recommended daily nutritional value from various foods.

Limitations

Access to centenarians was limited by dependence on community networks for those living independently and administrative restraints for those residing in licensed facilities. The sample's homogeneity limited generalizability because all the centenarians were Caucasian and mostly female. Therefore, the degree of diversity was limited.

Conclusion

Although nutrition represents a determinant of healthy aging, centenarians' perception explains why they choose what they eat, how much they eat, and how they eat. When caring for centenarians, healthcare providers must realize that nutrition contributes to healthy aging when a centenarian's perception influences the use of dietary behaviors that align with healthy eating patterns.

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Conflict of Interest: The authors declare that there are no conflicts of interest.

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