

Using Focus Groups to Explore Older Black Men's Perception of Dietary Interventions

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Abstract

Older Black men are underrepresented in research despite being disproportionately affected by Alzheimer's disease (AD) and cardiovascular (CV) risk factors related to AD compared with non-Hispanic Whites. Although dietary interventions have shown promise to reduce modifiable CV risk factors related to AD, Black Americans have lower adherence likely due to lack of cultural considerations. Using a noninterventional convergent parallel mixed-methods approach, this study examined the cultural contexts that inform perceptions of dietary interventions among older Midwestern Black men. All participants completed an online demographic and dietary habit survey prior to focus group discussions. Two focus group discussion sessions were conducted with a total of 10 cognitively normal Black men aged 55 years and older. Survey data were analyzed using a frequency analysis and qualitative data were analyzed using a six-step thematic analysis process. Most men indicated having hypertension ($N = 7$, 77.8%) and currently not following a dietary eating pattern ($N = 8$, 88.9%). Emerging themes identified included (1) knowledge of dementia, (2) perceptions of dietary interventions, (3) barriers impacting participation in dietary interventions, and (4) overcoming barriers to engage Black men in dietary interventions. Findings from this study should inform the design of future dietary interventions for AD prevention to enhance participation among older Black men.

Keywords

Alzheimer's disease, men of color, older adults, diet, mixed methods

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Introduction

Black Americans are 2 times more likely to develop Alzheimer's disease (AD) compared with non-Hispanic White Americans ("2020 Alzheimer's disease facts and figures," 2020). This disparity is likely attributed to modifiable cardiovascular (CV) risk factors such as hypertension and high cholesterol that disproportionately affect Black Americans and may predispose individuals to AD (Office of Minority Health, 2022). Several mechanisms in previous studies are noted to be responsible for this association. For example, hypertension leads to white matter alterations that represent pathological changes to the arteries and arterials in the brain, a consistent early marker of AD (Iadecola, 2014; Katayama & Hasebe, 2013; Li et al., 2023). High cholesterol levels can heighten the risk of CV risk, and the distribution and cholesterol levels in

brain cells may have adverse effects on A β metabolism (Leszek et al., 2021).

Considerable evidence suggests the importance of healthy eating to reduce risk of developing AD.

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Specifically foods high in omega 3 fatty acids (i.e., fish, nuts, seeds) contain anti-inflammatory properties that can reduce amyloid- β formation, oxidative stress, and inflammation which supports healthy brain function (Cole et al., 2009; Simonetto et al., 2019; Wood et al., 2022). In addition, consumption of flavonoid-rich foods such as green leafy vegetables, berries, and legumes reduces amyloid- β formation, oxidative stress, and inflammatory issues related to AD (Blennow et al., 2006).

Dietary interventions such as Dietary Approaches to Stop Hypertension (DASH) diet that promote adequate consumption of fruits and vegetables improve CV risk factors related to AD (Kivipelto et al., 2022; Lee et al., 2022). The DASH diet emphasizes higher consumption of nutrient-rich foods, including fruits, vegetables, whole grains, lean proteins, nuts, and seeds, while advocating for reduced intake of sodium, processed foods, red meat, and saturated fats (U.S. Department of Health And Human Services, 2017). In previous studies, the DASH diet has demonstrated its efficacy in lowering systolic blood pressure among both prehypertensive and hypertensive adults (Hashemi et al., 2019). Research suggests that the DASH diet may be neuroprotective, given the association between high blood pressure and an elevated risk of AD (McGrattan et al., 2019; Sáiz-Vazquez et al., 2022). Some observational studies have explored this relationship, demonstrating a positive association between adherence to the DASH diet and better cognitive function in older adults in the United States. Consumption of the DASH diet among older adults in the Memory and Aging Project ($N = 826$) demonstrated a slower rate of cognitive decline by 4.4 years (Tangney et al., 2014). In another study ($N = 3,831$) among older adults, higher adherence to the DASH diet was associated with higher levels of cognition over an 11-year time period (Wengreen et al., 2013).

Although, the DASH diet has resulted in reducing diabetes by up to 17% (O'Connor et al., 2020) and AD risk (Morris et al., 2015; van den Brink et al., 2019), Black Americans report lower adherence in these clinical trials. Research suggests that low adherence and acceptability to dietary interventions is likely due various factors that affect Black communities such as contextual influences (i.e., food prices; limited accessibility and availability of healthy foods), cultural influence of food preparation, consumption, and perception that healthy eating means rejecting one's culture (Airhihenbuwa et al., 1996; Epstein et al., 2012; Tangney et al., 2011). Other factors include lack of cultural considerations, such as soul food traditions in the design and implementation of the dietary

intervention (Epstein et al., 2012; Tangney et al., 2011). Soul food, deeply rooted in Black culture, is a significant aspect that encapsulates the essence of heritage, resilience, and legacy while fostering a profound sense of unity within Black communities (Healthline, 2021). Recognized for its robust and flavorful nature, traditional soul food is stereotyped as fried dishes, processed and organ meats, animal fats, sodium, and added sugar (Healthline, 2021; Pawlak & Colby, 2009). However, soul food also embraces nutrient-dense elements, incorporating leafy green vegetables as observed in the DASH diet (Wickman et al., 2021). Authentic soul food includes healthful dietary components (Jefferson et al., 2010), such as fruits and vegetables (e.g., collard greens, sweet potatoes, okra, and black eyed peas), which have been associated with enhanced CV health and reduced cognitive decline (Morris et al., 2018; Nilsson et al., 2017). Previous research demonstrated the effectiveness of culturally tailored dietary interventions for Black adults, particularly when guided by community engagement (J. H. Williams et al., 2006).

In response to low adherence, studies have looked at strategies to enhance inclusiveness as well as sustainable healthy dietary practices among Black Americans through cultural adaptations (Kramer et al., 2023; Miller et al., 2013; Parker et al., 2010; Shaw et al., 2022). A cooking intervention to enhance diet quality among Black Americans using a culturally salient delivery method reported that delivering cooking tutorials via video enhanced cooking behavior and consumption of healthy foods among Black adults (Kramer et al., 2023). In another study, a spirituality component was incorporated into the dietary curriculum of a 10-week weight loss intervention, which resulted in reduced systemic blood pressure and body mass index among Black women (Parker et al., 2010). Although these culturally tailored interventions have shown great promise for Black adults, Black men were underrepresented in these trials, which is consistent with recent reports since 2020 of older adult lifestyle modification clinical studies (Turner-McGrievy et al., 2021; Vidoni et al., 2021; Wetherell et al., 2020).

Previous research has highlighted how the social construct of masculinity affects dietary consumption among men (Stanley et al., 2023). Specifically, consumption of red meat has been reported to be associated with traditional masculinity (Rozin et al., 2012; Vartanian, 2015) and represents masculine qualities such as strength, virility, mating desirability, and competitiveness (Adams, 1990; Chan & Zlatevska, 2019; De Backer et al., 2020). In addition to red meat being associated with masculinity, consumption of it has

been linked to CV risk factors related to AD such as increased systolic blood pressure (Wang et al., 2022). Men who identify with the traditional masculine identity are more likely to consume more meat than women (Stanley et al., 2023). This suggests that consumption of meat is a behavior that facilitates the assertion within the construct of masculine identity among men.

Although previous research has identified both barriers and facilitators to participation in clinical trials among underrepresented racial/ethnic groups (Ballard et al., 2010; Konkel, 2015; Scharff et al., 2010; M. M. Williams et al., 2010), few studies have solely examined barriers to participation focusing on race/ethnicity in relation to biological sex. It is imperative to understand barriers and facilitators to adequately incorporate cultural needs into dietary intervention designs that will better enhance participation among Black men. The overall objective of this study was to examine the cultural context under which dietary interventions are perceived among older Midwestern Black men using a noninterventional convergent parallel mixed-methods approach.

Method

Research Design

This was an exploratory convergent parallel mixed-method study designed to inform the development of future culturally tailored diet interventions. A convergent parallel design approach allows for a more comprehensive understanding of the phenomenon by drawing from both qualitative and quantitative data seen within nutrition-related research (Zoellner & Harris, 2017). Within the context of this current study, a convergent parallel design allows for a more nuanced understanding of what influences participation in dietary interventions. Specifically, this study aims to understand knowledge, attitudes, and barriers that influence participation among older Black men in dietary interventions to inform the development of future adapted dietary interventions designed to enhance brain health. The approach used in this study incorporated transcendental phenomenology (Moustakas, 1994). Transcendental phenomenology was chosen because it provided a means to understand how dietary interventions are perceived and experienced by older Black men in addition to providing a thorough description of the shared experiences Black men have as it relates to dietary interventions. Transcendental phenomenology informed the analysis in this study which allowed for a systematic evaluation of meanings intrinsic to this phenomenon (Neubauer

et al., 2019). Specifically, using transcendental phenomenology enhanced the validity of the data in which bracketing (Tufford & Newman, 2010) was incorporated into the analytical approach to mitigate potential biases and preconceptions.

Approval to conduct the study was obtained by the University of Kansas Medical Center Institutional Review Board (STUDY#00148714).

Recruitment and Participants

Study recruitment was conducted through collaboration with an established Black men-focused community organization partner who had experience working with and serving Black men in the Midwestern region of the United States. Purposive, convenience sampling (Harris et al., 2009) was used to recruit participants in the Milwaukee, Wisconsin, metropolitan area from May 2022 to August 2022. The research team developed and provided the community partner with study flyers to distribute to their community-based connections. The study flyers included study contact information. Individuals interested in participating in the study reached out to the study team by phone to complete a brief telephone screening to verify eligibility. Study inclusion criteria included (1) self-identifying as Black or African American, (2) male, (3) aged 55 years and older, (4) English speaking, and (5) cognitively normal with an Eight-item Informant Interview to Differentiate Aging and Dementia (AD8) greater than 2.

Focus Group Questionnaire Development

The Health Belief Model (HBM) guided our exploration of perceptions of dietary interventions and brain health among older Black men in this study. The HBM was selected given its widespread use in dietary intervention development and for guiding health promotion and healthy behaviors development among diverse populations (Diddana et al., 2018; James et al., 2012; Romano & Scott, 2014). The HBM contains six constructs that include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Becker, 1974), all of which were used to inform the development of the focus group discussion guide. Specifically, the focus group discussion guide questions focused on perceived susceptibility of eating habits and AD, perceived benefits of following a healthy eating pattern, perceived severity of poor dietary eating practices, perceived barriers to participating in dietary interventions, and cues to action for adopting an adapted dietary

intervention that will enhance brain health. The final focus group interview guide comprised 14 questions.

Procedure

Each participant provided written informed consent prior to participating in the study. At the start of the study, participants completed a brief 10-min online demographic questionnaire (14 items). Participants also answered seven questions related to their current dietary habits. The complete demographic questionnaire can be found in the Supplementary Material. The questionnaire was administered virtually through a REDCap website link that was emailed to each of the participants 7 days before their scheduled focus group discussion.

We conducted two focus group discussions of four and six participants ($n = 10$), respectively. Our final sample size was consistent with prior guidance on achieving saturation and to yield applicable findings (Creswell & Creswell, 2017; Guest et al., 2016). In addition, the iterative nature of the focus groups allowed for examination of various dimensions during a single session. Participants were allowed and encouraged to build upon responses from fellow focus group participants, leading to a comprehensive understanding of a phenomenon. Data saturation was reached after completing two focus group discussions due to redundancy of information collected and because no new themes emerged, which is consistent with previous literature (Guest et al., 2006).

The focus groups were held at a predominately Black community serving organization venue and each focus group lasted roughly 60 min. Participants received a US\$25 gift card and a healthy meal catered by a local Black-owned restaurant during the focus group discussion for participating. We intentionally incorporated a fellowship environment, group discussion over a meal to enhance the experience of consuming a healthy meal and participation in research. Fellowship such as this is an integral part of the eating experience for the Black community. Specifically at the interpersonal level, food has been seen for its therapeutic value in connection with social contextual factors of eating in the Black community (Robinson, 2008).

Previous literature indicates that homogeneity (i.e., race, gender, age) between moderators and participants supports participant comfortability and creates a more free-flowing, open discussion (Morgan et al., 1998; Shaw et al., 2023; Skop, 2006). As such, each focus group in our study was moderated by a Black man, who was a part of the research team. The semi-structured focus group interview guide included open-

ended questions, including “What kind of things need to be done to help Black men understand the benefits of participating in dietary interventions?” and “What concerns do Black men have that would prevent them for participating in dietary brain health related interventions?” Furthermore, probing questions such as “How should a dietary intervention be delivered to best reach Black men?” were asked to extract deeper insights from focus group participants. All focus group discussions were audio recorded and transcribed verbatim.

Analysis

Qualitative and quantitative analyses were led by A.R.S. and E.D.V. A convergent parallel mixed-methods design was used in which qualitative and quantitative data were collected concurrently, analyzed separately, and kept independent until the interpretation phase in which results were merged. Transcripts from the focus group discussions were transferred into Dedoose (2021) for thematic coding and analysis. Qualitative data were analyzed using an iterative and reflective approach based on Braun and Clarke's (2006) six-step thematic analysis process as a means to enhance trustworthiness of the research (Nowell et al., 2017). The thematic analysis process involved (1) familiarization—transcripts were read and reread to gain a holistic view of the data, (2) generating initial coding—data were organized in Dedoose in systematic fashion in which we used open coding to develop and modify initial codes, (3) generating themes—we organized codes into broader themes that provided context to the research question, (4) reviewing themes—we reviewed data associated with each theme to determine whether the data aligned with the themes and reviewed the themes to determine whether they were coherent, (5) defining and naming themes—we completed a final refinement of the emerged themes and subthemes, and (6) reporting—we developed a manuscript that depicted participants' perceptions about dietary interventions. For quantitative data analyses, descriptives were summarized using SPSS (Version 27.0. IBM Corp: Armonk, NY, USA). Survey responses rates were calculated using basic frequency calculations. Missing data were limited and considered missing at random (Heitjan & Basu, 1996).

Results

A total of 10 men who self-identified as Black or African American participated in the two focus group discussions. Most participants were between the ages

Table 1. Demographics of Study Participants

Question	Response, n (%)
Age	
55–64	8 (88.9)
65–75	1 (11.1)
Marital status	
Married	8 (88.9)
Widowed	1 (11.1)
Education	
High school	1 (11.1)
Some college	4 (44.4)
Bachelor	2 (22.2)
Masters	2 (22.2)
Employment status	
Employed	3 (37.5)
Retired	5 (62.5)
Household income	
>US\$25,000	0
US\$25,000–US\$49,999	0
US\$50,000–US\$74,999	2 (22.2)
US\$75,000–US\$99,999	2 (22.2)
US\$100,000–US\$124,999	0
US\$125,000–US\$149,999	2 (22.2)
US\$150,000–US\$199,999	2 (22.2)
US\$200,000 or more	1 (11.1)
Health insurance coverage	
Yes	9 (100)
No	0
Health conditions	
Hypertension	7 (77.8)
High cholesterol	1 (11.1)
Diabetes	1 (11.1)
Overweight/obesity	3 (33.3)
Religion	
Christian	8 (88.9)
Muslim	1 (11.1)
Current dietary patterns	
Low sodium	1 (11.1)
None	8 (88.9)

of 55 and 64 years ($N = 8$, 88.9%), married ($N = 8$, 88.9%), with some college education ($N = 4$, 44.4%), and religiously identified as a Christian ($N = 8$, 88.9%). Household income ranged evenly between US\$50,000 and more than US\$200,000, with all participants indicating that they have health insurance. Most of the participants indicated that they had hypertension ($N = 7$, 77.8%) and some indicated that they were overweight or obese ($N = 3$, 33.3%). Full demographic characteristics of the participants are provided in Table 1. Most participants indicated that they currently did not follow a dietary pattern ($N = 8$, 88.9%) and consume less than both the daily recommended 1.5 to 2 servings of fruits ($N = 4$, 50%) and 2 to 3 servings of vegetables ($N = 5$, 62.5%). A complete description of participants' dietary background is provided in Table 2.

Four themes emerged from the focus group discussions, namely, (1) knowledge of dementia, (2) perceptions of dietary interventions, (3) barriers impacting participation in dietary interventions, and (4) bridging cultural barriers in dietary interventions.

Theme 1. Knowledge of Dementia

Many men in the focus group indicated that they knew of someone who had experienced dementia, such as a relative or friend of the family, in which some indicated that they perceived dementia as a natural part of aging:

Uh, when you used to. Uh, grandpa is surreal. You know, he, um, he's losing it and we just didn't know what it was. We just thought it came along with old age.

Also, many men perceived dementia in the Black community as being a serious issue because of sedentary lifestyle behaviors starting at an early age, which many believed propelled an earlier onset of dementia. In addition, most men perceived diet to have a significant impact on risk of developing dementia, with emphasis on consumption of fruit and vegetable intake:

Certain fruits and vegetables, like carrot for eyes, uh, tomatoes are for the heart and things like that. There are a lot of foods that you can eat that can improve your cognitive ability, uh, whether it's to hear, see, think, etcetera for memory.

This quote indicates that there is a level of awareness among Black men of how consumption of nutritious foods contributes to enhancing brain health. Although most men perceived consumption of fruit and vegetables to protect against dementia, 50% ($N = 4$) indicated that they only consumed 1 serving of fruit per day and 65.5% ($N = 5$) consumed 1 or fewer serving of vegetables per day in the dietary habits survey.

A few men shared that they were not familiar with factors that strongly contributed to increased risk of dementia:

I'm not, I'm not totally, uh, abreast as to what causes dementia. I know what dementia is. Mm-hmm., uh, but I'm not sure. But if I had to take a gander at it, I would think that what we put in our body has a lot to do with restoration of brain cells and things of that nature.

This quote illustrates that there may be a lack of awareness and knowledge as it pertains to understanding the specific risk factors related to dementia.

Table 2. Dietary Background of Study Participants

Question	Response options	N (%)
1. Do you follow a specific diet?	No	8 (88.9)
	Low Sodium	1 (11.1)
	Low fat	0
	Vegetarian	0
	Vegan	0
	Other	0
2. How many servings of FRUIT do you usually eat or drink each day? Think of a serving as being about 1 medium piece, or 1/2 cup of fruit, or 3/4 cup of fruit juice.	0 servings per day	0
	1 serving per day	4 (50.0)
	2 servings per day	3 (37.5)
	3 or more servings per day	1 (12.5)
	No response	1
3. How many servings of VEGETABLES do you usually eat or drink each day? Think of a serving as being about 1 cup of raw leafy vegetables, 1/2 cup of other cooked or raw vegetables, or 3/4 cup of vegetable juice.	0 servings per day	1 (12.5)
	1 serving per day	4 (50.0)
	2 servings per day	2 (25.0)
	3 or more servings per day	1 (12.5)
	No response	1
4. How is your food usually prepared? (select all that apply)	Baked	7 (77.8)
	Air fried	4 (44.4)
	Boiled	1 (11.1)
	Fried	5 (55.6)
	Grilled	7 (77.8)
5. What are your personal barriers to eating healthy? (example-eating fruits, vegetables, and foods with low sodium)	Lack of time	1 (11.1)
	Cost of food	1 (11.1)
	Transportation	0
	Cooking skills	1 (11.1)
	Tasted of healthy food	7 (77.8)
	Feeling hungry	0
6. Do you have transportation to the grocery store?	Yes	9 (100)
	No	0
7. What form of transportation do you use to access the grocery store?	Bus or other public transit	0
	Own vehicle	9 (100)
	Ride from friend/family/neighbor	0
	Rideshare (Uber, Lyft)	0
	Someone brings food to me (delivery service or friend/family member)	0
	Walk or bike	0

Theme 2. Perceptions of Dietary Interventions

Most men indicated that they had little knowledge about dietary research opportunities and participating in this present study was their first experience being introduced to research. Those who indicated that they were familiar with research had a background in health care or had previously participated in research studies due to personal health factors. When discussing the advantages of dietary interventions, several

men indicated that they perceived participating in dietary interventions as being beneficial in improving their overall quality of life:

Mentally you're sharper . . . physically you are more energetic. Yeah. Which plays on your attitude, your demeanor, anything that you, that comes out of you or come from you . . . it's increased overall. Uh, you do better because you are better.

Men conceptualized a healthy diet to include fruits and vegetables. Also, men conceptualized following a healthy diet as being the vessel for becoming cognitively sharper, physically energized, and improving one's mood. With respect to participating in research, men conceptualized dietary interventions as nutrition education and resources as a means to enhance one's health as demonstrated in the quote above:

Although many men perceived dietary interventions as beneficial to overall health, some men voiced that they believed that Black men would be apprehensive to participating in dietary interventions due to stigma:

I would think that you gonna have a lot of pushback. A lot of Black men don't want face health issues. They think that they, you know, strong as a horse and they can beat everything . . . I've, I'm that dude. I still do a lot of things I shouldn't do.

This demonstrates that although Black men recognize the benefits of dietary interventions, they may willfully resist participating as it would result in having to address health issues that they may feel could reflect on their masculinity. Black men believed that there is an expectation that requires them to be tough and by acknowledging perceived shortcomings as it relates to health, participating in dietary interventions would bring a sense of shame and embarrassment as it relates to masculinity.

Theme 3. Barriers Impacting Participation in Dietary Interventions

Discussion by Black men indicated that there were several perceived challenges, including access, taste, cost, and habits as it relates to healthy eating in dietary interventions. Several participants indicated that access to healthy foods was a barrier to healthy eating and perceived conditions that many Black men live in as an obstacle due to living in a food desert and having limited non processed food options readily available for purchase near their place of residence:

You go these corner stores, and they serve just the worst food to us as Black people. Yep. Mm-hmm. they come in there and they're getting the nachos.

Among the Black men, there was a perception that healthy food did not taste well, which was seen as a barrier to healthy eating as it relates to participation in dietary interventions:

The perception that healthy food doesn't taste good mm-hmm . . . and so if change that perception that, you know, this doesn't taste good. I know you got me to look at

some rice cakes. Mm. And I said, Man ain't no taste in no rice cake.

This quote indicates that there is a perception that healthy foods have a bland taste that makes it less appetizing and appealing to regularly consume among Black men. This sentiment is consistent with perceived personal barrier of taste ($N = 7, 77.8\%$) identified in the dietary habits survey:

Men in the focus group also shared that they perceived cost of healthy food as a barrier to eating healthy:

One of the biggest ones is cost. Mm-hmm., uh, the grocery bill right now is huge. When you throw in grapes, I looked at'em \$3.99 a pound.

Indeed, this is consistent with results from the dietary habits survey in which cost was noted as a barrier ($N = 1, 11.1\%$) to eating healthy.

Several participants also shared that they perceived habits as a barrier to healthy eating:

We got bad habits, you know . . . I'm just sitting up thinking I'm used to eating late, laying down, which ain't good to eat, lay down and uh, I learned, you know, that's not good, but I had been doing it so long. I'm beginning to break that, but that's one of my biggest problems.

This quote indicates that breaking bad habits can be challenging and that habits around food can equate to comfort that makes it difficult to overcome.

Theme 4. Bridging Cultural Barriers in Dietary Interventions

Participants identified ways to overcome barriers to better engage Black men in dietary interventions, including messaging, education, and by research teams offering safe collaborative spaces for Black male participants.

Many of the Black men voiced the importance of tailored messaging to enhance interest among Black men as it relates to participation in dietary interventions. Black men indicated that competitive-driven messaging would be beneficial in sparking interest because inherently men are competitive. "Cause it's always like a size up. You know how it is. It's just men, you know? . . . Then you knows it's just a natural thing." Also, Black men indicated the need for messaging to incorporate spirituality as a way to fully resonate with Black men across a large spectrum. "What

I'm saying is the Bible. Yeah. This is description. Yeah. The gospel is easy to digest. Yeah. For anyone. It doesn't matter where you come from."

Several of the men indicated they needed various types of educational resources to support their engagement in dietary interventions, including practical meal prep guides, cooking classes, healthy fast food menu lists, and tools to plant seeds of knowledge:

You know, just plant the seed and we just go with it and reach out to other people. Yeah. Other Black men let 'em know, Hey, this is what we should be doing. Cause a lot us don't know, you know, we are not educated. Some of us don't get on Facebook or computers and stuff. So we don't know. . . . So we have to be educated.

This quote suggests that participating in dietary interventions is greater than enhancing well-being at the individual level, but Black men find value and want to strive to promote health in their community through servant leadership. Therefore, it is imperative that dietary interventions are designed in a manner that would equip Black men as emerging nutrition and health community leaders. It is important to note that a few men in the focus groups discussed the importance of education not being delivered through intense and frequent repetition as this was viewed as a turnoff to engaging in dietary interventions. "[You] can't beat us over the head like our wives . . . cause I want peace. it's how you present it too."

Finally, several participants in the focus group discussions voiced the need for a safe collaborative space to participate in dietary interventions. Specifically, Black men indicated that they needed a space in which they could have open and honest dialogue in addition to a space that welcomed accountability as an extra support mechanism to enhance dietary behavior changes.

Discussion

This study explored cultural factors in which dietary interventions are perceived which provided a greater understanding of the perspectives and experiences of Midwestern Black men. Exploration with Black men revealed complex perceptions toward dietary interventions that were rooted in traditional masculine ideology. Four themes emerged from this research: (1) knowledge of dementia, (2) perceptions of dietary interventions, (3) barriers impacting participation in dietary interventions, and (4) bridging cultural barriers in dietary interventions.

Prior studies indicate that dietary patterns among older adults is linked to a plethora of factors,

including sociocultural attitudes, socioeconomic factors, and structural inequities in the neighborhood environment (People, Office of Disease, & Health, 2000). Congruent with previous research, our focus groups present barriers impacting participation in dietary interventions that were largely influenced by disparities related to access and cost. This study adds to the existing literature by providing context with regard to attitudes and beliefs rooted in masculine ideology that shape perception of dietary interventions while also providing insight into culture-specific needs as it relates to dietary interventions for older Black men.

Findings in this study indicated that participating in dietary interventions may challenge masculine identity and therefore be a salient barrier to healthy eating and participation in dietary interventions. Research suggests that men who adopt traditional masculine ideology with respect to dietary consumption are less likely to adopt dietary patterns that do not encompass archetypal masculine food, such as red meat which is associated with strength (Scholz & Lenhart, 2023; Sobal, 2005). As archetypal masculine foods encompass high consumption of red meat which is linked to higher risk of CV risk factors related to AD, it negatively impacts men's health. Unhealthy lifestyle practices and disinterest in improving health among men are rooted within the interaction between masculinity and social factors (Courtenay, 2011; Hooker et al., 2012; Mahalik et al., 2007). Aligned with previous research, our study demonstrated that conformity to masculine ideology prevents men from participating in dietary interventions as it is perceived as a weakness to acknowledge health issues and seeking support through participation. Moreover, previous literature suggests that consumption of vegetables is perceived to be more appropriate for women and correlated with femininity, which makes it inappropriate for men to adopt (Adams, 1990). This perception aligns with results from our study in which 77.8% ($N = 7$) of men reported consuming 2 or fewer servings per day. Despite barriers, Black men in this study reported value in health and the promotion of health in their community through servant leadership. These findings are congruent with previous literature in which Black men's perceived commitment to community and family shaped their definition of manhood and health (Griffith et al., 2015).

Based on information gathered from the focus group discussions, a dietary intervention heavily based on educational resources, servant leadership guidance, with a competitive-driven approach is ideal. Potential severity, and knowledge as it relates to AD prevention are components necessary in building perceived severity while reducing barriers to dietary intervention acceptability.

Our study had several strengths, including partnership with a predominantly Black community organization to support recruitment of older Black men in which this strategy has been reported to enhance recruitment of Black men in research (Hart et al., 2008; Hood et al., 2018). Second, the use of focus group discussions encouraged authentic responses in which participants were able to build on each other's ideas through the facilitated discussion. Third, the focus group discussions were administered in the community participants were a part of, which aids in reducing barriers of participating in research such as transportation (Luebbert & Perez, 2016). This study is not without limitations. The use of purposive sampling limited representativeness of the participants in the study and this study was composed of a small sample size of (four to six people per group), which can reduce generalizability of findings (Sharma, 2017). Finally, all of the Black men in the study had similar demographic profiles (i.e., marital status and residing in suburban community). Therefore, due to homogeneity of Black men in the study, the sample was not representative of the entire U.S. population, which limits diversity captured among Black men. Further quantitative research should be conducted to determine whether the perspectives demonstrated in this current study are present in a larger population of diverse Black men. In addition, future research is needed to build on these findings to identify specific culturally acceptable methods for integrating characteristics of masculinity, including servant leadership and competition in dietary interventions for older Black men.

Dietary interventions inclusion of Black men should be prioritized given the disproportionate impact AD has on this population. Our findings highlight the need for culturally appropriate study designs to enhance recruitment, feasibility, and acceptability of dietary interventions. Therefore, it is imperative that efforts to increase diversity in dietary interventions begin before the trial is underway in which the design itself prioritizes cultural values and reduction of barriers for participation.

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Supplemental Material

Supplemental material for this article is available online.

References

- Adams, C. (1990). *The sexual politics of meat: A feminist-vegetarian critical theory*. Continuum.
- Airhihenbuwa, C. O., Kumanyika, S., Agurs, T. D., Lowe, A., Saunders, D., & Morssink, C. B. (1996). Cultural aspects of African American eating patterns. *Ethnicity and Health, 1*(3), 245–260. <https://doi.org/10.1080/13557858.1996.9961793>
- Ballard, E. L., Gwyther, L. P., & Edmonds, H. L. (2010). Challenges and opportunities: Recruitment and retention of African Americans for Alzheimer disease research: Lessons learned. *Alzheimer Disease & Associated Disorders, 24*(Suppl.), S19–S23. <https://doi.org/10.1097/WAD.0b013e3181f12432>
- Becker, M. H. (1974). The health belief model and personal health behavior. *Health Education Monographs, 2*, 324–473.
- Blennow, K., de Leon, M. J., & Zetterberg, H. (2006). Alzheimer's disease. *Lancet, 368*(9533), 387–403. [https://doi.org/10.1016/s0140-6736\(06\)69113-7](https://doi.org/10.1016/s0140-6736(06)69113-7)
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.
- Chan, E. Y., & Zlatevska, N. (2019). Is meat sexy? Meat preference as a function of the sexual motivation system. *Food Quality and Preference, 74*, 78–87. <https://doi.org/10.1016/j.foodqual.2019.01.008>
- Cole, G. M., Ma, Q. L., & Frautschy, S. A. (2009). Omega-3 fatty acids and dementia. *Prostaglandins, Leukotrienes and Essential Fatty Acids, 81*(2–3), 213–221. <https://doi.org/10.1016/j.plefa.2009.05.015>
- Courtenay, W. (2011). *Dying to be men: Psychosocial, environmental, and biobehavioral directions in promoting the health of men and boys*. Routledge/Taylor & Francis Group. <https://doi.org/10.4324/9780203853245>

- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.
- De Backer, C., Erreygers, S., De Cort, C., Vandermoere, F., Dhoest, A., Vrinten, J., & Van Bauwel, S. (2020). Meat and masculinities. Can differences in masculinity predict meat consumption, intentions to reduce meat and attitudes towards vegetarians? *Appetite*, *147*, Article 104559. <https://doi.org/https://doi.org/10.1016/j.appet.2019.104559>
- Dedoose. (2021). *Version 9.0.17, cloud application for managing, analyzing, and presenting qualitative and mixed method research data*. www.dedoose.com
- Diddana, T. Z., Kelkay, G. N., Dola, A. N., & Sadore, A. A. (2018). Effect of nutrition education based on health belief model on nutritional knowledge and dietary practice of pregnant women in Dessie Town, Northeast Ethiopia: A cluster randomized control trial. *Journal of Nutrition and Metabolism*, *2018*, Article 6731815.
- Epstein, D. E., Sherwood, A., Smith, P. J., Craighead, L., Caccia, C., Lin, P.-H., Babyak, M. A., Johnson, J. J., Hinderliter, A., & Blumenthal, J. A. (2012). Determinants and consequences of adherence to the dietary approaches to stop hypertension diet in African-American and white adults with high blood pressure: Results from the ENCORE trial. *Journal of the Academy of Nutrition and Dietetics*, *112*(11), 1763–1773. <https://doi.org/10.1016/j.jand.2012.07.007>
- Griffith, D. M., Brinkley-Rubinstein, L., Bruce, M. A., Thorpe, R. J. Jr., & Metz, J. M. (2015). The interdependence of African American men's definitions of manhood and health. *Family & Community Health*, *38*(4), 284–296. <https://doi.org/10.1097/fch.0000000000000079>
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82.
- Guest, G., Namey, E., & McKenna, K. (2016). How many focus groups are enough? Building an evidence base for nonprobability sample sizes. *Field Methods*, *29*(1), 3–22. <https://doi.org/10.1177/1525822X16639015>
- Harris, J. E., Gleason, P. M., Sheean, P. M., Boushey, C., Beto, J. A., & Bruemmer, B. (2009). An introduction to qualitative research for food and nutrition professionals. *Journal of the American Diet Association*, *109*(1), 80–90. <https://doi.org/10.1016/j.jada.2008.10.018>
- Hart, A. Jr., Underwood, S. M., Smith, W. R., Bowen, D. J., Rivers, B. M., Jones, R. A., Parker, D., & Allen, J. C. (2008). Recruiting African-American barbershops for prostate cancer education. *Journal of the National Medical Association*, *100*(9), 1012–1020. [https://doi.org/10.1016/s0027-9684\(15\)31437-1](https://doi.org/10.1016/s0027-9684(15)31437-1)
- Hashemi, R., Rahimlou, M., Baghdadian, S., & Manafi, M. (2019). Investigating the effect of DASH diet on blood pressure of patients with type 2 diabetes and prehypertension: Randomized clinical trial. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, *13*(1), 1–4. <https://doi.org/https://doi.org/10.1016/j.dsx.2018.06.014>
- Healthline. (2021). *How to create a healthy soul food plate — Guide and recipes*. <https://www.healthline.com/nutrition/healthy-soul-food#bottom-line>
- Heitjan, D. F., & Basu, S. (1996). Distinguishing “missing at random” and “missing completely at random.” *The American Statistician*, *50*(3), 207–213.
- Hood, S., Hall, M., Dixon, C., Jolly, D., & Linnan, L. (2018). Organizational-level recruitment of barbershops as health promotion intervention study sites: Addressing health disparities among Black men. *Health Promotion Practice*, *19*(3), 377–389. <https://doi.org/10.1177/1524839917696715>
- Hooker, S. P., Wilcox, S., Burroughs, E. L., Rheaume, C. E., & Courtenay, W. (2012). The potential influence of masculine identity on health-improving behavior in mid-life and older African American men. *Journal of Men's Health*, *9*(2), 79–88. <https://doi.org/10.1016/j.jomh.2012.02.001>
- Iadecola, C. (2014). Hypertension and dementia. *Hypertension*, *64*(1), 3–5. <https://doi.org/10.1161/hypertensionaha.114.03040>
- James, D. C. S., Pobe, J. W., Oxidine, D. I., Brown, L., & Joshi, G. (2012). Using the health belief model to develop culturally appropriate weight-management materials for African-American women. *Journal of the Academy of Nutrition and Dietetics*, *112*(5), 664–670. <https://doi.org/https://doi.org/10.1016/j.jand.2012.02.003>
- Jefferson, W. K., Zunker, C., Feucht, J. C., Fitzpatrick, S. L., Greene, L. F., Shewchuk, R. M., Baskin, M. L., Walton, N. W., Phillips, B., & Ard, J. D. (2010). Use of the nominal group technique (NGT) to understand the perceptions of the healthiness of foods associated with African Americans. *Evaluation & Program Planning*, *33*(4), 343–348. <https://doi.org/10.1016/j.evalprogplan.2009.11.002>
- Katayama, T., & Hasebe, N. (2013). Angiotensin-receptor blockers, hypertension and Alzheimer disease—The entangled relationship. *Circulation Journal*, *77*(2), 315–316. <https://doi.org/10.1253/circj.cj-12-1550>
- Kivipelto, M., Palmer, K., Hoang, T. D., & Yaffe, K. (2022). Trials and treatments for vascular brain health: Risk factor modification and cognitive outcomes. *Stroke*, *53*(2), 444–456. <https://doi.org/10.1161/strokeaha.121.032614>
- Konkel, L. (2015). Racial and ethnic disparities in research studies: The challenge of creating more diverse cohorts. *Environmental Health Perspectives*, *123*(12), A297–A302. <https://doi.org/10.1289/ehp.123-A297>
- Kramer, E. B., Knight, E. L., & Bryan, A. D. (2023). Cooking interventions for improving diet quality among Black Americans: A randomized controlled trial. *Annals of Behavioral Medicine*, *57*(4), 323–333. <https://doi.org/10.1093/abm/kaac058>
- Lee, J., Howard, R. S., & Schneider, L. S. (2022). The current landscape of prevention trials in dementia. *Neurotherapeutics*, *19*(1), 228–247. <https://doi.org/10.1007/s13311-022-01236-5>

- Leszek, J., Mikhaylenko, E. V., Belousov, D. M., Koutsouraki, E., Szczechowiak, K., Kobusiak-Prokopowicz, M., Mysiak, A., Diniz, B. S., Somasundaram, S. G., Kirkland, C. E., & Aliev, G. (2021). The links between cardiovascular diseases and Alzheimer's disease. *Current Neuropharmacology*, *19*(2), 152–169. <https://doi.org/10.2174/1570159x18666200729093724>
- Li, Z., Wang, W., Sang, F., Zhang, Z., & Li, X. (2023). White matter changes underlie hypertension-related cognitive decline in older adults. *NeuroImage Clinical*, *38*, Article 103389. <https://doi.org/10.1016/j.nicl.2023.103389>
- Luebbert, R., & Perez, A. (2016). Barriers to clinical research participation among African Americans. *Journal of Transcultural Nursing*, *27*(5), 456–463. <https://doi.org/10.1177/1043659615575578>
- Mahalik, J. R., Burns, S. M., & Syzdek, M. (2007). Masculinity and perceived normative health behaviors as predictors of men's health behaviors. *Social Science & Medicine*, *64*(11), 2201–2209. <https://doi.org/10.1016/j.socscimed.2007.02.035>
- McGrattan, A. M., McGuinness, B., McKinley, M. C., Kee, F., Passmore, P., Woodside, J. V., & McEvoy, C. T. (2019). Diet and inflammation in cognitive ageing and Alzheimer's disease. *Current Nutrition Reports*, *8*(2), 53–65. <https://doi.org/10.1007/s13668-019-0271-4>
- Miller, K. J., Dye, R. V., Kim, J., Jennings, J. L., O'Toole, E., Wong, J., & Siddarth, P. (2013). Effect of a computerized brain exercise program on cognitive performance in older adults. *American Journal of Geriatric Psychiatry*, *21*(7), 655–663. <https://doi.org/10.1016/j.jagp.2013.01.077>
- Morgan, D. L., Krueger, R. A., Scannell, A. U., & King, J. A. (1998). *Planning focus groups*. Sage.
- Morris, M. C., Tangney, C. C., Wang, Y., Sacks, F. M., Bennett, D. A., & Aggarwal, N. T. (2015). MIND diet associated with reduced incidence of Alzheimer's disease. *Alzheimer's & Dementia*, *11*(9), 1007–1014. <https://doi.org/https://doi.org/10.1016/j.jalz.2014.11.009>
- Morris, M. C., Wang, Y., Barnes, L. L., Bennett, D. A., Dawson-Hughes, B., & Booth, S. L. (2018). Nutrients and bioactives in green leafy vegetables and cognitive decline: Prospective study. *Neurology*, *90*(3), e214–e222. <https://doi.org/10.1212/wnl.00000000000004815>
- Moustakas, C. E. (1994). *Phenomenological research methods*. Sage.
- Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives on Medical Education*, *8*(2), 90–97. <https://doi.org/10.1007/s40037-019-0509-2>
- Nilsson, A., Salo, I., Plaza, M., & Björck, I. (2017). Effects of a mixed berry beverage on cognitive functions and cardiometabolic risk markers; A randomized cross-over study in healthy older adults. *PLOS ONE*, *12*(11), Article e0188173. <https://doi.org/10.1371/journal.pone.0188173>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), Article 1609406917733847. <https://doi.org/10.1177/1609406917733847>
- O'Connor, L. E., Hu, E. A., Steffen, L. M., Selvin, E., & Rebholz, C. M. (2020). Adherence to a Mediterranean-style eating pattern and risk of diabetes in a U.S. prospective cohort study. *Nutrition & Diabetes*, *10*(1), Article 8. <https://doi.org/10.1038/s41387-020-0113-x>
- Office of Minority Health. (2022). *Heart disease and African Americans*. <https://minorityhealth.hhs.gov/heart-disease-and-african-americans>
- Parker, V. G., Coles, C., Logan, B. N., & Davis, L. (2010). The LIFE project: A community-based weight loss intervention program for rural African American women. *Family & Community Health*, *33*(2), 133–143. <https://doi.org/10.1097/FCH.0b013e3181d594d5>
- Pawlak, R., & Colby, S. (2009). Benefits, barriers, self-efficacy and knowledge regarding healthy foods; perception of African Americans living in eastern North Carolina. *Nutrition Research and Practice*, *3*(1), 56–63. <https://doi.org/10.4162/nrp.2009.3.1.56>
- People, Office of Disease, & Health. (2000). *Public health service*. US Department of Health and Human Services. https://www.cdc.gov/nchs/healthy_people/hp2000.htm
- Robinson, T. (2008). Applying the socio-ecological model to improving fruit and vegetable intake among low-income African Americans. *Journal of Community Health*, *33*(6), 395–406. <https://doi.org/10.1007/s10900-008-9109-5>
- Romano, V., & Scott, I. (2014). Using health belief model to reduce obesity amongst African American and Hispanic populations. *Procedia—Social and Behavioral Sciences*, *159*, 707–711. <https://doi.org/https://doi.org/10.1016/j.sbspro.2014.12.457>
- Rozin, P., Hormes, J. M., Faith, M. S., & Wansink, B. (2012). Is meat male? A quantitative multimethod framework to establish metaphoric relationships. *Journal of Consumer Research*, *39*(3), 629–643.
- Sáiz-Vazquez, O., Puente-Martínez, A., Pacheco-Bonrostro, J., & Ubillos-Landa, S. (2022). Blood pressure and Alzheimer's disease: A review of meta-analysis. *Frontiers in Neurology*, *13*, Article 1065335. <https://doi.org/10.3389/fneur.2022.1065335>
- Scharff, D. P., Mathews, K. J., Jackson, P., Hoffsuemmer, J., Martin, E., & Edwards, D. (2010). More than Tuskegee: Understanding mistrust about research participation. *Journal of Health Care for Poor and Underserved*, *21*(3), 879–897. <https://doi.org/10.1353/hpu.0.0323>
- Scholz, A. E., & Lenhart, J. (2023). Masculinity and veganism: The effect of linking vegan dishes with masculinity on men's attitudes toward vegan food. *Frontiers in Communications*, *8*, Article 1244471. <https://doi.org/https://doi.org/10.3389/fcomm.2023.1244471>
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, *3*(7), 749–752.
- Shaw, A. R., Lofton, S., & Vidoni, E. D. (2023). A virtual photovoice study of older African Americans perceptions of neurovascular clinical trials. *Alzheimer Disease and*

- Associated Disorders*, 37(2), 113–119. <https://doi.org/10.1097/wad.0000000000000550>
- Shaw, A. R., Vidoni, E. D., Burns, J. M., Berkley-Patton, J., & Sullivan, D. K. (2022). Developing a culturally tailored brain healthy diet intervention for older Midwestern African Americans: A qualitative and quantitative study. *Alzheimer's & Dementia*, 18(S11), Article e061248. <https://doi.org/https://doi.org/10.1002/alz.061248>
- Simonetto, M., Infante, M., Sacco, R. L., Rundek, T., & Della-Morte, D. (2019). A novel anti-inflammatory role of omega-3 PUFAs in prevention and treatment of atherosclerosis and vascular cognitive impairment and dementia. *Nutrients*, 11(10), Article 2279.
- Skop, E. (2006). The methodological potential of focus groups in population geography. *Population, Space and Place*, 12(2), 113–124. <https://doi.org/10.1002/psp.402>
- Sobal, J. (2005). Men, meat, and marriage: Models of masculinity. *Food and Foodways*, 13(1–2), 135–158. <https://doi.org/10.1080/07409710590915409>
- Stanley, S. K., Day, C., & Brown, P. M. (2023). Masculinity matters for meat consumption: An examination of self-rated gender typicality, meat consumption, and veganism in Australian men and women. *Sex Roles*, 88(3), 187–198. <https://doi.org/10.1007/s11199-023-01346-0>
- Tangney, C. C., Kwasny, M. J., Li, H., Wilson, R. S., Evans, D. A., & Morris, M. C. (2011). Adherence to a Mediterranean-type dietary pattern and cognitive decline in a community population. *American Journal of Clinical Nutrition*, 93(3), 601–607. <https://doi.org/10.3945/ajcn.110.007369>
- Tangney, C. C., Li, H., Wang, Y., Barnes, L., Schneider, J. A., Bennett, D. A., & Morris, M. C. (2014). Relation of DASH- and Mediterranean-like dietary patterns to cognitive decline in older persons. *Neurology*, 83(16), 1410–1416. <https://doi.org/10.1212/wnl.0000000000000884>
- Tufford, L., & Newman, P. (2010). Bracketing in qualitative research. *Qualitative Social Work*, 11(1), 80–96. <https://doi.org/10.1177/1473325010368316>
- Turner-McGrievy, G. M., Wilson, M. J., Bailey, S., Bernhart, J. A., Wilcox, S., Frongillo, E. A., Murphy, E. A., & Hutto, B. (2021). Effective recruitment strategies for African-American men and women: The nutritious eating with soul study. *Health Education Research*, 36(2), 206–211. <https://doi.org/10.1093/her/cyab003>
- 2020 Alzheimer's disease facts and figures. (2020). *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 16(3), 391–460. <https://doi.org/10.1002/alz.12068>
- U.S. Department of Health and Human Services. (2017). *Your guide to lowering your blood pressure with DASH*. National heart, Lung and Blood Institute.
- van den Brink, A. C., Brouwer-Brolsma, E. M., Berendsen, A. A. M., & van de Rest, O. (2019). The Mediterranean, Dietary Approaches to Stop Hypertension (DASH), and Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diets are associated with less cognitive decline and a lower risk of Alzheimer's disease—A review. *Advances in Nutrition*, 10(6), 1040–1065. <https://doi.org/10.1093/advances/nmz054>
- Vartanian, L. R. (2015). Impression management and food intake. Current directions in research. *Appetite*, 86, 74–80. <https://doi.org/10.1016/j.appet.2014.08.021>
- Vidoni, E. D., Morris, J. K., Watts, A., Perry, M., Clutton, J., Van Sciver, A., Kamat, A. S., Mahnken, J., Hunt, S. L., Townley, R., Honea, R., Shaw, A. R., Johnson, D. K., Vacek, J., & Burns, J. M. (2021). Effect of aerobic exercise on amyloid accumulation in preclinical Alzheimer's: A 1-year randomized controlled trial. *PLOS ONE*, 16(1), Article e0244893. <https://doi.org/10.1371/journal.pone.0244893>
- Wang, M., Ma, H., Song, Q., Zhou, T., Hu, Y., Heianza, Y., Manson, J. E., & Qi, L. (2022). Red meat consumption and all-cause and cardiovascular mortality: Results from the UK Biobank study. *European Journal of Nutrition*, 61(5), 2543–2553. <https://doi.org/10.1007/s00394-022-02807-0>
- Wengreen, H., Munger, R. G., Cutler, A., Quach, A., Bowles, A., Corcoran, C., Tschanz, J. T., Norton, M. C., & Welsh-Bohmer, K. A. (2013). Prospective study of dietary approaches to stop hypertension- and Mediterranean-style dietary patterns and age-related cognitive change: The Cache County Study on Memory, Health and Aging123. *American Journal of Clinical Nutrition*, 98(5), 1263–1271. <https://doi.org/https://doi.org/10.3945/ajcn.112.051276>
- Wetherell, J. L., Ripperger, H. S., Voegtle, M., Ances, B. M., Balota, D., Bower, E. S., Depp, C., Eyler, L., Foster, E. R., Head, D., Hershey, T., Hickman, S., Kamantigue, N., Klein, S., Miller, J. P., Yingling, M. D., Nichols, J., Nicol, G. E., Patterson, B. W., & . . . Lenze, E. J. (2020). Mindfulness, education, and exercise for age-related cognitive decline: Study protocol, pilot study results, and description of the baseline sample. *Clinical Trials*, 17(5), 581–594. <https://doi.org/10.1177/1740774520931864>
- Wickham, B. E., Enkhmaa, B., Ridberg, R., Romero, E., Cadeiras, M., Meyers, F., & Steinberg, F. (2021). Dietary management of heart failure: DASH diet and precision nutrition perspectives. *Nutrients*, 13(12), Article 4424. <https://doi.org/10.3390/nu13124424>
- Williams, J. H., Auslander, W. F., de Groot, M., Robinson, A. D., Houston, C., & Haire-Joshu, D. (2006). Cultural relevancy of a diabetes prevention nutrition program for African American women. *Health Promotion Practice*, 7(1), 56–67. <https://doi.org/10.1177/1524839905275393>
- Williams, M. M., Scharff, D. P., Mathews, K. J., Hoffsuemmer, J. S., Jackson, P., Morris, J. C., & Edwards, D. F. (2010). Barriers and facilitators of African American participation in Alzheimer disease biomarker research. *Alzheimer Disease and Associated Disorders*, 24(24 Suppl.), S24–S29. <https://doi.org/10.1097/WAD.0b013e3181f14a14>
- Wood, A. H. R., Chappell, H. F., & Zulyniak, M. A. (2022). Dietary and supplemental long-chain omega-3 fatty acids as moderators of cognitive impairment and Alzheimer's disease. *European Journal of Nutrition*, 61(2), 589–604. <https://doi.org/10.1007/s00394-021-02655-4>
- Zoellner, J., & Harris, J. E. (2017). Mixed-methods research in nutrition and dietetics. *Journal of the Academy of Nutrition and Dietetics*, 117(5), 683–697. <https://doi.org/10.1016/j.jand.2017.01.018>