

A Qualitative Analysis of Healthy Eating among White, Hispanic, and Black Individuals with Type 2 Diabetes Mellitus

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Abstract

Objective: The purpose of this study was to explore knowledge, practices, facilitators and barriers of healthy eating among White, Hispanic, and Black individuals with Type 2 Diabetes Mellitus (T2DM).

Design: A qualitative content analysis was conducted using data from four focus groups.

Setting: Participants were recruited from a hospital registry who self-reported successful dietary behaviors.

Participants: Adults with T2DM were recruited across different racial and ethnic groups, and focus groups were facilitated using a structured guide.

Main outcome measure: The main outcomes were themes from focus group comments.

Analysis: Focus group transcripts were analyzed using qualitative content analysis. Data were coded then categorized thematically to identify key dietary strategies, facilitators and barriers.

Results: Twenty-five participants across racial and ethnic groups shared insights into their dietary practices. The overarching theme for diabetes diet practices and strategies was healthy eating principles in practice. Behavioral and social strategies employed varied among groups. Disparities among family units in nutrition knowledge and application were evident. Three themes for barriers to dietary adherence emerged: Influence of family and friends, emotions and temptations, and lack of culturally tailored dietary recommendations. Two themes for dietary facilitators were identified: self-management of healthy eating and social support.

Conclusions and implications: The study underscores the importance of culturally tailored and individualized dietary recommendations for effectively managing T2DM. More research is needed to address diverse racial and ethnic populations.

Keywords: Healthy eating, Strategies, Diversity, Disparity, Type 2 Diabetes Mellitus

Introduction

Diabetes is a leading cause of death in the US, resulting in an average loss of 4.4 years of life per affected individual [1]. Minoritized communities bear a disproportionate burden of Type 2 Diabetes Mellitus (T2DM) [1,2]. Diabetes inequities are the results of socioeconomic disparities, including diet-related

differences and limited access to healthy foods [3].

Culturally tailored self-management educational programs, combined with medical management, have the potential to enhance clinical outcomes by lowering A1c levels (average 0.5% to 1.0%); improving knowledge; and improving dietary behaviors [4–8].

Healthy meal plans that are culturally relevant are more likely to be adopted and followed by adults with diabetes [9]. Healthy eating strategies for diabetes include limiting refined sugars, increasing fiber intake, and consuming a balanced diet rich in fruits, vegetables, and whole grains. These recommendations can conflict with traditional cultural eating patterns. Culturally tailored interventions, which consider traditional foods and dietary practices, have shown to improve diabetes management outcomes in diverse populations [10–12].

The Association of Diabetes Care Specialists recommends individualized and goal-oriented counseling to improve diabetes related behaviors [13]. However, despite the established benefits of healthy eating, individuals from minoritized communities frequently have lower levels of nutrition knowledge [14]. Culturally sensitive lifestyle interventions have shown to be effective in Hispanic populations by reducing diabetes risk and improving dietary habits [12]. There are fewer culturally relevant healthy eating interventions in Black populations [11]. Language and educational barriers are evident, highlighting the need for tailored programs for those with lower English literacy levels [10].

Culturally sensitive dietary interventions can improve the ability of PWD to meet their glucose targets when social and cultural contexts and dietary barriers are considered [1]. Mobile health (mHealth) interventions, which incorporate culturally appropriate education and self-monitoring tools, have shown promise in improving dietary behaviors [15]. Systematic reviews also underscore the effectiveness of culturally relevant dietary interventions in meeting glycemic targets [16].

Barriers to following a healthy diet in PWD often have social context. Access to healthy food, difficulty avoiding salty and sweet food, portion control, time constraints and financial constraints are significant barriers to diabetes management among Black adults [17–19]. The Hispanic community has barriers with following recommended meal plans, including lack of access to culturally sensitive health information. However, utilizing various media to disseminate information including Spanish options can improve healthy eating [20–23]. Overall, few clinical nutrition interventions have focused on racial or ethnic minorities to assess improvement in outcomes for adults with diabetes [24].

Self-efficacy is crucial for overcoming barriers to behaviors such as healthy eating [25]. The dynamic interplay between individual characteristics, community factors, access to food, social support networks and cultural norms play a crucial role in shaping health behaviors [26,27]. Targeted, individualized and culturally sensitive interventions that address the unique needs of diverse populations with diabetes can improve healthy eating, ultimately contributing to the reduction of health disparities in diabetes care [28].

Though expert consensus recognizes nutrition plans should be individualized based on personal and cultural preferences, generally diet guidelines for people with diabetes may not be suitable for specific racial and ethnic groups, which can lead [29] to inadequate healthy eating practices and lower self-efficacy. Although racial disparities in diabetes have been widely studied, there is a paucity of research comparing healthy eating among racial and ethnic minorities with White adults with diabetes, and recent years have seen a decline in studies focusing on healthy eating in Black adults with diabetes.

In this qualitative study, we explored healthy eating practices and strategies among White, Hispanic, and Black individuals with T2DM. We identified barriers faced and facilitators employed when attempting to follow a healthy meal plan. We extracted common themes that can be the foundation for recommendations to develop self-efficacy programing.

Methods

Research design

This study employed a secondary qualitative content analysis of data obtained from four focus groups consisting of individuals diagnosed with Type 2 Diabetes Mellitus (T2DM) who self-reported successful dietary behaviors, as identified by a screening questionnaire (**Appendix A**). Focus group investigation followed standardized methodology [30,31].

Recruitment

The focus groups were completed as part of a larger prospective, multi-method instrument development study based in Massachusetts. After Institutional Review Board (IRB) [32] approval, purposeful sampling was utilized to recruit PWD from an endocrinology clinic. Recruitment efforts included personal invitation from clinic staff, media broadcast and posters strategically placed in clinic waiting rooms [33].

Eligible recruits were (1) between 18 and 75 years old, (2) diagnosed with T2DM, (3) practiced successful dietary behaviors per a screening questionnaire (**Appendix A**), and (4) able to read and speak English. Participants received a \$25 incentive and parking permits for their participation.

Data collection

Data on race and sex were collected. The focus groups were organized by race/ethnicity. Given participants' concerns, age, education, occupation, income, and insurance were not collected. Each session included a moderator, a recorder, and an observer/recorder. A Black PhD researcher assisted with the Black focus group, and a Latinx PhD researcher assisted with the Hispanic focus group. Due to weather disruptions, two focus groups were conducted for White participants. Three discussions were held at a hospital and one at a clinic. Each session lasted approximately 1.5 to 2 hrs.

Data analysis

After additional IRB [34] approval, the focus group transcripts were analyzed using qualitative content analysis. NVivo Version 14 facilitated the coding process [35]. Authors SHJ and NAA analyzed the initial transcript to develop a codebook, and SHJ coded the remaining transcripts, with NAA reviewing all codes. This approach achieved 100% agreement on the codes. SHJ, NAA, and MLL subsequently reviewed and refined the codes, collapsing them into overarching themes. The themes were derived by comparing, contrasting, and synthesizing the codes [36].

Results

After written informed consent, a discussion guide facilitated the focus group conversations, including questions such as: “How difficult is it to follow this meal plan?”, “What makes it difficult to follow your meal plan?”, “What strategies are the most helpful in following your meal plan?”, and “What advice would you give others who might be considering a change in their diet to improve their diabetes?” (Appendix B).

Twenty-five adults who self-identified as White (n=9), Hispanic (n=10), or Black (n=6) participated. The major overarching theme for diabetes diet practices and strategies was Healthy Eating Principles in Practice; “it’s time...to make a change”. Four subthemes emerged from discussions on strategies to improve eating habits: limiting carbohydrates and food portions, planning ahead, intuitive eating and recognizing the influence of culture (See Table 1). Several barriers to healthy eating were identified and divided into three themes:

influence of family and friends, emotions and temptations, and lack of culturally tailored dietary recommendations for ongoing self-management. Participants also identified facilitators that empowered them to follow their meal plan. Two facilitator themes were identified: self-management of healthy eating and social support (See Table 2). Each theme for dietary practices and strategies, barriers and facilitators are described below with excerpts from the focus groups to illustrate the important concepts.

Healthy eating principles in practice

Participants in all four focus groups described their daily eating patterns, struggles they faced following a meal plan, and the strategies they applied to overcome challenges. Though all participants had some diabetes education, how they incorporated their knowledge into their meal plan varied. All focus groups emphasized lean protein, increasing vegetables and lowering carbohydrate intake. Only White focus groups identified consumption of cereal as part of their meal plan and discussed marketed fad diets. Only the Hispanic group mentioned rice.

Applied healthy eating strategies

All focus groups discussed strategies to make better and healthier choices while managing their diabetes. Portion control, planning ahead, intuitive eating, substitution for foods and beverages with higher carbohydrate content were discussed in all groups. Only the two White focus groups discussed strategies while eating out.

Table 1. Themes and subthemes from focus group discussions on healthy eating practices among individuals with T2DM.

Theme	Subthemes	Example Quotes
Healthy Eating Principles in Practice		"I learned how to do the pressure cooker thing with the raw seasons and you don't use grease, but you have a rack..." (Black male)
		"Halibut, haddock, salmon; if I do have a thing of tuna, I'll put pickles in it. They're low sugar..." (White female)
Applied Healthy Eating Strategies	Limiting Carbohydrate Intake and Food Portions	"You can look on the back of the sheet and you get all the carbs, all the data." (White male)
	Planning Ahead	"Pack in a plastic bag what I want for the day when I go out, like celery sticks and carrot sticks..." (White female)
	Intuitive Eating	"It's important not to let yourself get hungry because then you're going to attack the refrigerator..." (White female)
	Recognizing Influence of Culture	"You know we are raised in 'our plates'. Too much rice, too much beans, too much chicken, [no] salad. That's our plate. We grew up with that. So, it's time for us to make a change." (Hispanic female)

Table 2. Themes, subthemes, and illustrative quotes from focus group discussions on barriers and facilitators to healthy eating among adults with diabetes.

Theme	Subtheme	Quotes
Barriers to Healthy Eating	Influence of Family and Friends	"I came back to what my wife was cooking." (White male)
		"Family or friends were often insensitive toward her dietary needs..." (Hispanic female)
		"It's like you're pressured... because if you're talking about guys and you got all the party food..." (Black male)
		"I wonder if my father said... 'You looked good. Congratulations on losing the weight.'" (White female)
		"I came back to what my wife was cooking." (White male)
		"The security wife or mall cop lady... would count the pieces making sure he doesn't sneak one." (Black male)
	Emotions and Temptations	"You're just bombarded with so much that you just kind of feel like you want to, and sometimes I will." (White female)
		"Having kids around being equal to having candies in front of your face." (Black male)
		"Eating to be comforting when she was cranky and emotional." (White female)
	Dietary Recommendations Not Individualized	"Eating more when depressed or happy." (Black male)
		"They're saying: Try this or cut it back and see if you can try to deal with this food instead of something else, and it's hard." (White female)
		"My dietician wants me to eat more vegetables and fish, but I don't like a lot of vegetables; I don't eat any kind of fish at all." (White male)
		"I reached my goal, and then I didn't go to the meetings. I didn't buy food anymore. I was in maintenance, and that was the problem." (Black male)
		"Maintenance is harder than losing because when you're losing it's very structured. You don't know what to do [to maintain the weight loss]." (White female)
Facilitators to Healthy Eating	Self-Management of Healthy Eating	"Sometimes she uses 'self-motivating speech' to 'talk herself out' of some temptations." (White female)
		"3 times per week; one hour each time." (White male)
		"I put my emotions in check with how I live spiritually." (Black male)

Theme	Subtheme	Quotes
Social Support	Emotional Support	"He calls me every day: 'Did you go for your walk? What did you eat today, Nana?'" (White female) "Support from his community keeping him accountable to 'meet at the mall [for a] daily walk'" (White male)
	Tangible Support	"They won't purchase stuff that's not good for me. It's not in the house." (Black male) "I would take him to diabetes classes and it got to the point where he learned, and he would instruct me on what to do." (Hispanic female) "A food delivery system that worked for her." (White female) "A business catering healthier meals to people with diabetes." (Black male)
	Informational Support	"HCPs, including dietitians and diabetes care and education specialists, to be a great resource." "Get into that program, and they'll meet every week. They'll go over food." (White female)
	Appraisal Support	"Wow, you must have strong will power!" (Black female)

Subtheme 1. Limiting carbohydrate intake and food portions

White and Hispanic groups talked about reading nutrition labels, lower-calorie food choices, and lowering carbohydrates intake. There was no discussion of reading nutrition labels in the Black group. White and Hispanic groups exchanged general nutrition knowledge and discussed the importance of portion control and exercise. Participants from all focus groups discussed carbohydrate and calorie content of foods. They used this knowledge to decide what foods to include in their meal plan or whether they needed to substitute a lower-carbohydrate alternative. However, there was some misinformation about carbohydrate content of particular foods across all focus groups. For example, White focus groups discussed eating sweet potatoes as a substitute for regular potatoes.

Subtheme 2. Planning ahead

Participants from all focus groups expressed how planning ahead helped them follow healthy meal plans. Planning ahead was helpful in reducing their temptation, cravings, and snacking on junk foods; and in controlling carbohydrate and calorie intake.

Subtheme 3. Intuitive eating

Participants from all groups shared that applying intuitive

eating helped control calorie intake and portion size.

Subtheme 4. Recognizing influence of culture

Some participants from different groups shared how their cultural background influenced food intake, especially in childhood. Participants also expressed desires to influence behaviors of their family members to prevent diabetes for them.

Healthy eating barriers

Theme 1: Influence of family and friends

Participants in all groups discussed the impact of others on what they ate. They highlighted how family can negatively impact self-efficacy. Additionally, the social network in which people live and work presented a challenge. Participants in all focus groups described food choices in social settings as not being healthy. Family and friends were also found to be critical, controlling, and hurtful, resulting in discouraging participants' desire to continue following their meal plan.

Theme 2: Emotions and temptations

All focus groups shared emotions experienced when following their meal plan. Temptation was identified as the hardest. Many reported high self-efficacies when they resisted temptations and identified emotional eating as a challenge.

Theme 3: Generic dietary recommendations

All focus groups identified a lack of clear instructions or recommendations tailored to their circumstances as a barrier.

Healthy eating facilitators

Theme 1: Self-management of healthy eating

Participants from all groups identified internal factors that helped them manage eating, i.e. self-discipline and will-power. With structure they were more likely to follow a healthy meal plan.

Theme 2: Social support

Social support was the most prevalent facilitator in all four focus groups—particularly ongoing support from a network of individuals, i.e., family, community, peers, clinicians, or diabetes programs and resources. Four distinct types of social support were identified: emotional, tangible, informational, and appraisal.

Type 1: Emotional support

Participants from all groups highlighted the impact of emotional support received from individuals within family and friend groups, the healthcare system, and the community that enabled them to follow meal plans successfully.

Type 2: Tangible support

All groups shared examples of effective tangible support, i.e. family members helping with meal planning, shopping, and cooking.

Type 3: Informational support

Participants in all groups found their dietitians and diabetes care & education specialists to be great resources acknowledging the value of diabetes programs to help follow meal plans.

Type 4: Appraisal support

Only one participant described appraisal support as a source for greater confidence and success.

Discussion

This secondary qualitative data analysis explored diabetes diet knowledge, strategies, barriers and facilitators among individuals with T2DM across multiple racial and ethnic groups. The overarching theme, Healthy Eating Principles in Practice, emerged. As one participant stated, "it's time... to make a change." Subthemes for diet strategies included: limiting carbohydrate intake, planning ahead, intuitive

eating, and recognizing the influence of culture. Influence of family and friends, emotions and temptations, and dietary recommendations that are not individualized for ongoing self-management were barriers. Self-management of healthy eating and social support were identified as facilitators.

Similar qualitative analysis of dietary patterns among Hispanic and Black individuals with diabetes indicated that poor patient-clinician communication and poor understanding of consequences of unhealthy eating can be barriers to a healthy diet. However, perspectives of White individuals with diabetes were not included [37]. Contrary to our expectations, our analysis lacked disparate racial/ethnic group-specific barriers and facilitators to following a healthy meal plan. Rather we found individual level differences that positively or negatively affected the self-efficacy.

The participants, who self-identified as being successful in healthy eating with diabetes, embraced several Association of Diabetes Care & Education Specialists (ADCES) healthy eating principles and strategies. One common strategy was reading food labels, i.e., total carbohydrates and fat content, particularly among White and Hispanic participants. This aligns with existing literature showing an increase in label-reading habits among both white and minoritized ethnic groups [38]. However, the comprehension and practical use of nutrition labels can vary. Sharif et al. found that while many people read labels, their understanding and application of the information are often limited. Thus, there is a need for improved education on interpreting and utilizing nutritional information effectively [39]. We did not explore in depth our participants' comprehension of nutrition labels.

A lower-carbohydrate diet helps maintain glucose levels within target ranges [40]. Starchy vegetables like potatoes are a staple for many families but are significant sources of carbohydrates [41]. Our findings indicate that some view sweet potatoes as a healthier, lower-carbohydrate alternative to regular potatoes. However, the glycemic index (GI) of potatoes is more influenced by cooking methods rather than type of potato [42]. This highlights a gap in patient education regarding the glycemic impact of different cooking methods.

Intuitive eating, mindful eating, and planning ahead are strategies that can improve diabetes management [43–45]. These approaches were mentioned in all focus groups, but research shows disparities in their application among racial and ethnic individuals. Black and Hispanic individuals might face more significant challenges in implementing mindful eating due to cultural and socio-economic factors [45,46]. This indicates the need for more individually tailored processes.

Similar to previous studies, we found that family can serve as both a barrier and a facilitator to healthy eating. Interventions should educate families on how to provide constructive

support and avoid hindering behaviors [47]. Involvement and support from social partners are consistently associated with good diabetes outcomes when characterized by warmth, collaboration, and acceptance. Under-involvement and interactions characterized by conflict, criticism and control are consistently associated with poor diabetes outcomes [48–50].

In our study, participants emphasized the pivotal role of social support as a facilitator for following diet plans. These findings correlate with findings of Kowitt *et al.* [51]. Barriers identified in this study affected self-efficacy. Diabetes technology such as continuous glucose monitoring (CGM) has been shown to positively affect self-efficacy and is a valuable tool in aiding dietary decisions [52–55]. Interventions using CGM that are aimed at promoting healthy eating habits among diverse racial and ethnic groups could offer valuable insights into optimizing diabetes management strategies to avoid some of the barriers found in this study.

Strengths, limitations, and future directions

Strengths of this study were the inclusion of 25 racially and ethnically diverse people with T2DM, and the qualitative data analysis that examined both individual and group levels. Nevertheless, this study had several limitations.

The small sample size that was solely recruited from a Massachusetts hospital limits generalizability. The investigation did not include Asians, Native Americans, and Native Hawaiian/Pacific Islanders who are also disproportionately affected by T2DM. The focus groups were conducted exclusively in English. The geographic location of the groups limited accessibility for potential participants. These factors contributed to selection bias and may have affected the depth of the contributions.

We did not collect specific demographic data, which limits generalizability and could impact the interpretation of data. Some differences observed may be due to socioeconomic disparity instead of cultural influences. Intuitive eating and planning ahead can be effective strategies for healthy eating for those with resources and support for successful implementation. However, food insecurity can limit the effectiveness of these strategies.

All participants had some diabetes education prior to participation in the focus groups. However, the depth and perception of the education was not assessed. Variability in diabetes education can affect self-efficacy and application of healthy eating behaviors.

Additionally, we did not perform member checking to confirm the qualitative results of our findings. No repeat focus groups were conducted, and the research team did not identify topics needing further follow-up. Due to weather and

travel conditions, two sessions were necessary for the White group, potentially impacting the data quality, although this was judged to be minimal. The Black group's audio recording quality was poor, and the sample size was smaller (n=6) compared to the White (n=9) and Hispanic (n=10) groups. As a result, our findings may not fully capture the complexities of dietary adherence, highlighting the need for future research to include a broader range of participants and settings.

Conclusion

This study highlighted the cultural relevance of food items in diabetes meal plans. Rather than ethnic or racial differences, we found individual level factors positively or negatively affected eating behaviors and self-efficacy in people with diabetes. We recommend that healthcare providers offer recommendations that align with an individual's cultural eating patterns and preferences regardless of ethnicity of race. Focusing on an individual's culture-specific practice might enhance self-efficacy and foster a supportive environment that mitigates barriers and leverages facilitators, ultimately leading to improved diabetes management and reduced health disparities. Our study contributes to advancing comprehension of the complex interplay between individual beliefs, social dynamics, and environmental influences in shaping dietary behaviors among individuals with T2DM from diverse racial and ethnic backgrounds. We underscore the importance of culturally tailored and individualized diabetes management. There remains a need for further research to address diverse populations including associated biometric outcomes.

Conflict Disclosure

Authors have no conflicts to disclose.

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