Call for Cultural and Language-Concordant Diabetes Care, Nutrition Education, and Self-Management for South Asian Individuals Living in the US

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ABSTRACT
Ethnic South Asian Americans have the highest relative risk of type 2 diabetes mellitus in the US. Culturally tailored and language-concordant diabetes care and nutrition interventions can potentially promote South Asian diabetes management and disease progression. From our perspective, the extent of their use and evaluation in the US settings remains limited. This Perspective characterizes and evaluates the necessity and outcomes of culturally and linguistically adapted lifestyle interventions targeted toward type 2 diabetes mellitus indicators among South Asian individuals in the US. Suggestions for how this education could be modified include emphasizing the cultural and linguistic knowledge and self-awareness of diabetes educators and the sociological and historical factors that influence the cultural and linguistic orientation of diabetes care professionals and their clients. Such strategies could ensure better diabetes education and self-management among South Asian individuals.

Key Words: South Asian Americans, type 2 diabetes, diabetes care, nutrition education, self-management (J Nutr Educ Behav. 2023;55:905−913.)

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INTRODUCTION
Nearly 4.3 million South Asian individuals live in the US, including people with ancestry from Bangladesh, India, Nepal, Pakistan, Bhutan, Sri Lanka, the Maldives, Afghanistan, and the diaspora—past generations of South Asian individuals who originally settled in many areas around the world, including Africa, the Caribbean, Canada, and Europe.1 Studies increasingly demonstrate that South Asian immigrants are experiencing higher rates of cardiovascular diseases, metabolic syndrome, and diabetes.2 South Asian individuals in the US experience a disproportionately high burden of type 2 diabetes mellitus (T2DM) and have a higher prevalence of complications at the time of diagnosis than other racial and ethnic groups.3 Even at lower body mass index (BMI) and at younger ages, South Asian individuals exhibit a higher risk of diabetes relative to other race/ethnic populations.4 Besides the unique biological reasons,1 there are epidemiological transition and lifestyle changes because of South Asian migration to the US (eg, changes to diet and physical activity), which are important in explaining the rise of T2DM in South Asian individuals in the US compared with other ethnicities.3,5,6

As a chronic disease, T2DM requires complex care and involves various self-management decisions such as healthy eating, physical activity, and maintaining a healthy body weight to manage the symptoms and avoid long-term health complications.7 However, the quality of diabetes care may need improvement at the patient, provider, and health care system levels.8 Because of various factors, including cultural and language discordant care, South Asian individuals with T2DM are less likely to receive diabetes care and nutrition education, which may hinder their ability to manage their diabetes best.9 Dietary behaviors are important modifiable lifestyle factors that play a role in managing and progressing T2DM and its associated comorbidities and complications. In addition to poor access to diabetes nutritional counseling, South Asian individuals with T2DM receive nutritional educational materials or behavioral interventions that may not be culture or language concordant.

In this Perspective, we describe the current status of diabetes care and management among US South Asian individuals with T2DM and the lack of culture and language-concordant care, nutrition education, and self-management. We propose a roadmap to incorporate culturally and linguistically adapted diabetes care and education and improve clinical, community-based, and patient-centered outcomes for South Asian individuals with T2DM. We are not suggesting that South Asian individuals are the only group who would benefit from
culturally concordant diabetes care, education, and community support. However, South Asian individuals, one of the fastest growing ethnic groups in the US, with a relatively higher risk of diabetes even at a younger age and with lower body weight, require attention.

**TYPE 2 DIABETES IN SOUTH ASIAN INDIVIDUALS LIVING IN THE US**

South Asian individuals in the US have high incidence and prevalence rates of T2DM. A study using data from the National Health and Nutrition Examination Surveys 2011–2016 reported the highest prevalence of diabetes (23.3%) among US South Asian groups compared with Southeast Asian (22.4%) and East Asian subgroups (14.0%) living in the US. When comparing diabetes prevalence among 5 different ethnic groups in the US, Flowers et al found that South Asian individuals had a higher prevalence of diabetes (20.5%) compared with White (5.8%), Chinese (10.2%), African (16.5%), and Hispanic (15.7%) American individuals. Similarly, although comparing the prevalence of prediabetes and diabetes by BMI with in 4 race groups residing in Northern California, Vicks et al noted that the diabetes prevalence among normal-weight individuals was 5% in White men compared with 28% in South Asian men and was 2% in White women compared with 14% in South Asian women.

Multiple biological, hormonal, and lifestyle factors place South Asian individuals at elevated risk of T2DM. South Asian individuals have a greater genetic susceptibility to insulin resistance and pancreatic β-cell dysfunction, which may be linked to the higher prevalence of T2DM in that population, even at younger ages. The distinct body composition, such as higher ectopic fat, greater waist circumference, and increased risk of abdominal adiposity, may partially explain the increased predisposition to T2DM. In addition to this genetic predisposition, lower levels of adiponectin and significantly higher levels of leptin among South Asian individuals that are known contributors to insulin resistance may exert additional risks leading to the development of T2DM. Unfortunately, factors such as migration, acculturation, and cultural beliefs and practices about diet and physical activity may further compound the rising prevalence of T2DM among South Asian individuals in the US. Moreover, this diverse population often faces tremendous socioeconomic and structural obstacles, including food insecurity and physical environments such as poor sidewalks, recreation/facilities, and safety concerns, which may also impact their lifestyles and, subsequently, T2DM risk.

**RISK FACTORS OF TYPE 2 DIABETES UNIQUE TO SOUTH ASIAN INDIVIDUALS**

Traditionally, the South Asian diet is rich in carbohydrates and saturated fat with low protein intake and dietary diversity and is often inadequate in meeting micronutrient intake recommendations. These dietary imbalances are associated with insulin resistance and metabolic disorders, increasing the risk of T2DM. Migration has further exacerbated the effects of this imbalanced diet, indicating the higher consumption of fruit juice, chips, margarine, cola, and alcoholic beverages and consequently increasing the risk of T2DM. Although local, regional, and country-level differences in South Asian diet exist, there are similarities in diet across South Asian countries and is mostly comprised foods with high glycemic indexes, both from traditional foods and the adoption of Westernized foods.

Most studies that consider the South Asian diet primarily focus on the dietary behavior of people of the Indian subcontinent, followed by Pakistani and Bangladeshi origin. However, countries in South Asia that are underrepresented in research might have different dietary behaviors and preferences than those of dietary behaviors in South Asian countries that are more often studied. Thus, further research considering these differences in dietary behaviors among individuals across countries in South Asia is warranted.

Although a higher proportion of South Asian individuals follow a vegetarian or plant-based diet because of religious beliefs and cultural reasons, it is important to note that there are differences in the quality of plant-based diets, and not all vegetarian or plant-based diets are healthy. Bhupathiraju et al used 3 indexes of a plant-based diet: overall plant-based, healthy, and less-healthy plant-based diet to examine their associations with cardiometabolic risk profile among 735 individuals of South Asian ancestry living in the US. Authors identified that only healthy plant-based diets comprising whole grains, fruits, and vegetables were associated with a favorable cardiometabolic risk profile. They also observed a lower risk of T2DM in individuals with a healthy plant-based diet. However, they found no significant association between unhealthy plant-based diets comprising refined grain, fruit juice, and added sugar and cardiometabolic risk profile.

Although not specifically looking at a less-healthy plant-based diet, according to Mohan et al, total carbohydrate consumption, glycemic index, and glycemic load were associated with an increased risk of T2DM in Asian Indians. In contrast, fruits, vegetables, fiber, and dairy had a negative association with T2DM. Although studies have identified unhealthy plant-based diets associated with T2DM in the US population, these data are limited among South Asian individuals. Future research must specifically explore how less-healthy plant-based diets affect South Asian individuals’ risk of cardiometabolic health.

Physical inactivity and higher stress levels may interfere with the body’s homeostasis, thus increasing the risk of insulin resistance and T2DM. South Asian individuals appear less physically active and spend a significant amount of time sedentarily compared with their Caucasian counterparts. This sedentary lifestyle, along with genetic traits, causes a higher percentage of visceral fat in the abdominal area of South
Asian individuals, which may be associated with a higher prevalence of T2DM, even with lower BMIs compared with the rest of the world. Moreover, acculturation-related stress that emerges from conflict when South Asian individuals must adjust to the culture of the host country may influence unfavorable patterns of dietary intake and physical activity, putting South Asian individuals at greater risk of T2DM and its complications.

DIABETES CARE IN SOUTH ASIAN INDIVIDUALS: THE ROLE OF PATIENT, PROVIDER, AND HEALTH CARE SYSTEMS

We used an adapted version of the socioecological model to discuss the role of patients at the individual level and their social networks and community, relationships between patients, health care providers, and the care systems in diabetes care and nutrition among US South Asian individuals (Figure). South Asian individuals with T2DM must make daily self-management decisions, such as healthy diet and weight management combined with pharmacologic approaches and complex care activities to manage their diseases and related complications. Cultural and language differences, religious and social beliefs, and low levels of health literacy result in miscommunication between patients and health care providers, or misconceptions and lack of knowledge pose barriers to effective diabetes care and management of T2DM in South Asian individuals in the US. Given that many South Asian Americans are not fluent in English and speak a language other than English at home, their experiences navigating daily life and health care systems pose a barrier to receiving diabetes care in the US. In addition, the US health systems may lack resources and patient-centered and culturally sensitive diabetes care and nutrition education training for the health care providers that address the cultural needs of South Asian individuals.

Several studies have explored the expectations of diabetes care among South Asian individuals living in different Western countries and identified barriers to effective diabetes care and self-management. Rhodes et al, in a study exploring the experience of local health services among 12 Bangladeshi people with T2DM living in the UK, identified barriers to diabetes education and care such as lack of communication between patients and medical and nursing staff, language difficulties, use of informal interpreter services, and difficulties understanding professional attitudes and methods of working. Findings by Fagerli et al suggested that lack of trust, dilemmas around role enactment, and diverging role expectations between patients and health care providers were perceived barriers to receiving diabetes care among Pakistani-born people in Oslo, Norway. Similarly, Lawton et al identified barriers such as language and communication discordance with the health care provider, seeking bilingual professionals instead of informal interpreters, and lack of trust in Western physicians because of cultural differences impeding South Asian Indian and Pakistani from receiving and understanding diabetes education in the UK. In addition, health care professionals need to consider dietary behaviors and factors that contribute to the dietary acculturation of South Asian individuals and how incorporating these factors into care could improve patients’ outcomes.

The diabetes care provided to South Asian individuals may not be linguistically and culturally adapted to the patient’s food preferences or physical activity beliefs. South Asian individuals may be advised to restrict or limit foods traditionally consumed in their culture, as these foods may be high glycemic index foods while being recommended to consume nontraditional foods commonly consumed in the US. South Asian individuals often lack understanding of what a healthy diabetic diet is or have misconceptions that physical activity has harmful effects. This advice may contribute to distress and a rejection of dietary recommendations, decreased nutrient-dense food intake, increased energy-dense food consumption, and compromised nutritional status.

NUTRITION EDUCATION AND SELF-MANAGEMENT OF T2DM IN SOUTH ASIAN INDIVIDUALS

We discussed the current nutrition education efforts and self-management strategies among South Asian individuals with T2DM in the US and outlined some recommendations.
A recent culturally and linguistically adapted diabetes education program focusing on diet, physical activity, and weight loss showed feasibility and high acceptability for Bangladeshi immigrants to the US. In this study, Shah et al identified key themes of focus groups conducted among 50 Bangladeshi participants closely tied to their sociocultural beliefs and revealed participants’ high levels of satisfaction with the program. In addition, the authors noted statistically significant reductions in participants’ mean weight, systolic/diastolic blood pressure, and triglycerides following participation in the program. Conversely, a systematic review determined the effectiveness of culturally

(Table) focused on cultural and linguistic adaptations to diabetes education materials developed for South Asian communities in the US. Diabetes educational materials need to be created in such a way that are culturally and language concordant to South Asian individuals, providing nutritional education that does not eliminate foods that are traditional for South Asian communities, and consider community-based strategies. A strategy for supporting individuals to improve their knowledge of diet and increase the intake of diabetes-friendly foods is by reflecting cultural food preferences, as has been shown through community-based interventions. Weber et al developed a Diabetes Prevention Program for the US South Asian community reflecting cultural food preferences and exercise and observed positive changes in participants’ weight, waist circumference, blood pressure, plasma lipids, hemoglobin A1C, and other cardiometabolic markers. Another factor to remember is that heterogeneity exists within South Asian groups. Thus, accounting for such differences while adapting and designing culturally tailored diabetes education in clinical and community practice is critical. Emerging literature indicates success in diabetes management that considers dietary, cultural, and language differences within South Asian groups both in South Asian and Western countries. However, these kinds of interventions are lacking in the US.

### Table: Recommendations for Cultural and Language-Concordance Diabetes Care and Nutrition Education Among US South Asian Individuals With Type 2 Diabetes Mellitus

<table>
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<tr>
<th>Issue</th>
<th>Recommendations</th>
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<tr>
<td>Diabetes care</td>
<td>Promote representations of South Asian individuals in research studies</td>
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<td></td>
<td>Partnership with local and regional organizations to promote awareness and success</td>
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<td>Dietary adherence</td>
<td>Make sure on what South Asian traditional foods and dietary patterns are available</td>
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<td>Promote studies showing the efficacy of language and cultural concordant materials</td>
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<td>Low nutrition knowledge</td>
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<td>Community health workers led program</td>
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<td>Patient navigators</td>
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<td>Community clinics</td>
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<td>Patient-directed material/steering committee</td>
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<td>Identifying health professional's role and responsibility in the healthcare system</td>
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<td>Consider the use of dietary patterns appropriate for the population (eg, vegetarian)</td>
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<td></td>
<td>Consider incorporating the plate method (eg, 25% carbohydrates, 25% protein, 50% vegetables)</td>
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<td></td>
<td>Incorporating peer educators</td>
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<td></td>
<td>Research on the cost-effectiveness of dietary interventions and adapt as needed</td>
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| Opportunities          | Promote benefit awareness                                                        |
|                       | Promote awareness of diabetes care                                               |
|                       | Community health workers led program                                              |
|                       | Patient navigators                                                               |
|                       | Community clinics                                                               |
|                       | Consider the use of dietary patterns appropriate for the population (eg, vegetarian) |
|                       | Consider incorporating the plate method (eg, 25% carbohydrates, 25% protein, 50% vegetables) |
|                       | Incorporating peer educators                                                      |
|                       | Research on the cost-effectiveness of dietary interventions and adapt as needed   |

| Barriers               | Low referrals to diabetes care services                                           |
|                       | Low health literacy                                                             |
|                       | Underinsurance                                                                 |
|                       | Low awareness                                                                   |
|                       | Low community/cultural interventions                                            |
|                       | Dietary adherence                                                              |
|                       | Cost                                                                            |
|                       | Low nutrition knowledge                                                        |
|                       | Lack of adaptations                                                             |
|                       | Cost                                                                            |
|                       | Low community/cultural interventions                                            |

| Dietary adherence      | Promote benefit awareness                                                        |
|                       | Promote awareness of diabetes care                                               |
|                       | Community health workers led program                                              |
|                       | Patient navigators                                                               |
|                       | Community clinics                                                               |
|                       | Consider the use of dietary patterns appropriate for the population (eg, vegetarian) |
|                       | Consider incorporating the plate method (eg, 25% carbohydrates, 25% protein, 50% vegetables) |
|                       | Incorporating peer educators                                                      |
|                       | Research on the cost-effectiveness of dietary interventions and adapt as needed   |
and linguistically adapted diabetes education programs with migrant South Asian glycated hemoglobin levels found little to no benefit. However, little information was presented on providing and integrating culturally congruent care across studies and how those were tailored to specific groups within South Asian origins. Thus, it is important to rethink how South Asian individuals are labeled as a homogenous group and account for such differences when adapting and designing culturally tailored lifestyle interventions in clinical and community practice. More programs that deliver intervention on the basis of the participant’s preferred language and health-related beliefs and incorporating culturally sensitive dietary information possibly by persons of the same cultural and ethnic background are warranted.

Culturally adapted and language-concordant education materials need to incorporate, at the very minimum, foods traditionally consumed by South Asian individuals to reduce the feeling of isolation and distress. Although traditional South Asian diets are high in carbohydrates, largely consisting of white rice, flatbreads, potatoes, and deep-fried high-carbohydrate snacks, these diets can also be high in fiber and have a wide variety of ethnic vegetables and fruits that are low in glycemic index. Beans, nuts, and many gluten-free grain options that help reduce gut inflammation may be used. Moreover, South Asian diets include a lot of spices, some of which have potential benefits for the symptoms of metabolic syndrome besides enhancing the taste of the food. Although diets vary across South Asian individuals, some are characterized by a variety of sweet water fish and seafood, and most have little to no red meat, whereas several of the currently available nutrition education materials overwhelmingly have excluded foods important to Asian individuals in general (eg, rice, potatoes, wheat bread, sweets), shifting messages away from avoiding foods entirely important to the South Asian community toward looking for ways to incorporate them is necessary.

**STRATEGIES TO EFFECTIVELY EDUCATE SOUTH ASIAN INDIVIDUALS WITH TYPE 2 DIABETES**

Dietary modifications may include appropriate portion control or customary portion size by age and sex, frequency, food swap (eg, white rice for brown rice), and culinary techniques (eg, baked potatoes vs deep-fried). In a systematic review that assessed the portion-size estimation element applicable to the dietary assessment of traditional foods and dishes among UK-residing ethnic minorities, the authors reported the lack of validated tools used across studies. Therefore, it is important to consider customary portion sizes, traditional household utensil usage, and population literacy levels to further help accurately estimate portion sizes of South Asian dishes. A New York-based culturally and linguistically adapted diabetes prevention program among Sikh Indians that included materials focusing on healthy components of their traditional diet, portion control of traditional food such as rice or bread, and healthy vegetarian options has shown some benefits, including increased physical activity and decreased BMI or blood glucose level among individuals at risk of diabetes. Additional programs of its kind would be beneficial to manage South Asian individuals with T2DM better.

Strategies for dietary modifications may also include increasing dietary diversity that is lacking in the South Asian diet and reducing the high glycemic index food burden by following a plating method (eg, 25% rice and 50% vegetables seasoned with traditional spices, with 25% protein sources preferred by South Asian individuals). In addition, nutrition education that connects educational content with individuals’ life conditions may benefit from enhancing participants’ satisfaction in such programs and promoting diabetes-friendly eating behaviors. A qualitative study conducted among 12 Pakistani immigrants living in Denmark identified participants’ perceived barriers, such as disconnection between the content of the education and life conditions, difficulty integrating the education into everyday life, and failure to include the participants’ taste preferences in diabetes education which would help to better fit into their daily life. Thus, more focus should be placed on collaborative processes in the dietary educational setting to achieve appropriate education and improve communication between this population and health care professionals.

Considering cultural and religious nuances in dietary interventions and counseling important to South Asian communities, such as fasting and sweets preferences during religious festivals and holidays, may increase patients’ adherence, confidence, and self-efficacy. Although culturally relevant diet counseling tools and interventions based on primary care have been undertaken among the South Asian community to improve diet, there is still a need for developing such dietary interventions following these strategies. Importantly, we need more South Asian health care providers and community health workers who can provide culturally and language-concordant care and support and South Asian researchers who can build trust and encourage increased participation in research. In addition, there is a need for adequate training and competencies in the application of culturally sensitive diabetes education and patient-centered care and alignment between researchers and health care professionals with regard to the educational philosophy underlying the use of tailored programs.

Because diversifying the health care workforce is critical, patient navigators (ie, community health workers) can serve as a bridge to health care providers. A New York City community-based health worker pilot intervention showed success and high acceptability of culturally and linguistically adapted diabetes management education among Bangladeshi immigrants to the US. Although the positive influence of peer nutrition education on diabetes self-management has been reported among some ethnic groups, the lack of South Asian representation in US community health care settings...
may hinder this possibility among South Asian individuals that have traditionally lacked access to adequate diabetes care. In addition, South Asian individuals may face discrimination and be hesitant to seek health care, whereas navigators can reduce work to build trust with South Asian individuals and provide education in safe locations such as temples or mosques.63

Community-based dietary interventions employing navigators could also incorporate family and faith, further promoting dietary, cultural, and language concordance. Family, particularly among South Asian individuals, is crucial to cultural adaptations of diabetes management. Because diet modification is an important part of self-management for patients with diabetes, including family members in diabetes care and nutrition education would be advisable because patients may feel stressed about negotiating with their family members around modifying diet and other health behaviors.60 Dietary interventions, as described by Wallia et al.64 have included family members in cultural adaptations for diabetes programs and have witnessed success in achieving dietary habits among South Asian individuals, which is conducive to better diabetes management.64

Health-related behaviors frequently incorporating traditional therapies may create an important connection between the cultural and spiritual beliefs of South Asian individuals and biomedical practice.66 Ayurvedic medicine, focusing on treating medical conditions with natural, nonbiomedical therapies, is a traditional form of alternative medicine long practiced in South Asian countries and used for diabetes treatment throughout countries in that region.65,66 Diabetess care and community-based interventions among South Asian individuals in the US may consider ayurvedic medicine, which is generally considered safer and has fewer side effects than the biomedical approach. This approach may help build trust in relationships between South Asian patients who frequently seek cultural and spiritual connections to their roots and health care providers in the US.

Finally, increased language and cultural concordance and building trust can facilitate further research in the South Asian community to develop better approaches to remaining challenges.67 Previously, researchers have determined positive factors influencing ethnic group participation in community-based participatory research. For example, Rios et al.68 identified a level of trust and rapport, flexible and culturally tailored methods, and partnerships with trusted programs influencing Latino/Hispanic participation in nutrition research by conducting in-depth interviews with experienced community nutrition researchers across the US. Despite their growth and heterogeneity, however, South Asian American populations and their subgroups remain underrepresented in health research,69 and factors influencing South Asian participation in research have not been adequately explored. Although the primary goal is to identify factors leading to heart diseases among US South Asian individuals, The Mediators of Atherosclerosis in South Asians Living in America study has conducted some community-based participatory research to better understand the prevalence and incidence of T2DM and risk factors unique to US South Asians.5 More research on Mediators of Atherosclerosis in South Asians Living in America studies representing the South Asian community in the US is warranted.

IMPLICATIONS FOR RESEARCH AND PRACTICE

The South Asian community with diabetes faces distress through overly restrictive nutritional prescriptions, a lack of traditional food advice and culturally and language-concordant care, and a lack of South Asian providers in both clinical and community health settings. This Perspective highlights the current status and gap in diabetes care and nutrition education and how cultural and linguistic adaptation approaches could better serve the South Asian community with diabetes living in the US (Table). Although we have addressed some recommendations in the table, the goal of this Perspective was not to address all that has been included in the table. Recognizing that the South Asian community is not homogeneous, strategies to improve diabetes care and education should first increase research efforts into deep and surface cultural practices across this diverse population.66 Formative research identifying beliefs, attitudes, and practices should be the basis for developing materials and care plans supporting moderate use of traditional foods and acknowledging individuals and religious and familial foundations. People with ancestry from India, Pakistan, Bangladesh, Afghanistan, Nepal, Bhutan, the Maldives, and Sri Lanka should all be acknowledged for individual cultures, beliefs, and possibly physiology that further understanding requires investigation before applying practice strategies. As previously mentioned, research is needed to specifically explore how less-healthy plant-based diets affect South Asian individuals’ risk of cardiometabolic health. In addition, research to better understand the prevalence and incidence of T2DM and risk factors unique to US South Asian individuals requires additional study. As with other groups, research recruitment may be challenging and will benefit from an in-depth assessment.

Once this formative work has been initiated, in collaboration with health care providers and researchers, patient navigators can work together with patients to develop materials and interventions that are culturally and language-appropriate to reduce discordant care, health inequities, and disparities in the South Asian community. This work does not need to progress linearly, but the initial attempts to improve care and education for those of South Asian origin as described in this Perspective should be strengthened and expanded.

REFERENCES


43. Mahmood B, Cox S, Ashe MC, et al. We just don’t have this in us...: understanding factors behind low levels of physical activity in South Asian immigrants in Metro–Vancouver, Canada. PLos One. 2022;17:e0273266.


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