

Asian Indian Views on Diet and Health in the United States

Importance of Understanding Cultural and Social Factors to Address Disparities

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This study describes Asian Indian immigrant perspectives surrounding dietary beliefs and practices to identify intervention targets for diabetes and heart disease prevention. Participants were asked about conceptualizations of relationships between culture, food, and health during 4 focus groups (n = 38). Findings reveal influences of beliefs from respondents' native India, preservation of cultural practices within the US social structure, conflicts with subsequent generations, and reinterpretation of health-related knowledge through a lens, hybridizing both "native" and "host" contexts. Galvanization of ethnically valued beliefs incorporating family and community structures is needed for multipronged approaches to reduce disproportionate burdens of disease among this understudied minority community. **Key words:** *Asian Indian, chronic disease, cultural contexts, disparities, qualitative inquiry*

AN ABUNDANCE of research has shown that Asian Indians living in the native subcontinent and those who have emigrated from India exhibit a higher rate of obesity-related diseases such as type 2 diabetes, hypertension, and heart disease.¹⁻⁴ Asian Indians have a significantly higher prevalence

of diabetes than other minority populations, even among those with uniform access to health care.^{1,5-7} Although genetic susceptibility and novel risk factors may play a role, poor diet, physical inactivity, and excess adiposity still remain the major risk factors.^{8,9} As a result, Asian Indians have been designated as and "at-risk" special population in *Healthy People 2010*.^{10,11} Addressing these disparities is essential considering that this ethnic subgroup is the second largest Asian subgroup in the United States and its population has more than tripled between 1990 and 2010.^{12,13}

Behavioral interventions targeting modifiable factors for diabetes and cardiovascular disease—namely diet and physical activity—hold most promise for addressing these disproportionate cardiometabolic disease rates among Asian Indians.^{14,15} However, existing efforts to understand and impact many cardiovascular risk factors may potentially be misdirected if such intervention strategies do not account for the cultural framework and cognitive structuring in people's interpretations of

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their health and action. For many immigrant groups, dietary patterns hold significant cultural value. Ethnographic research has shown eating to be a complex and dynamic vehicle for performing rituals, executing critical social functions, expressing faith and spirituality, invoking deeply held values or beliefs, establishing cultural identity, and/or distinguishing or solidifying group membership.¹⁶ For instance, “festival foods” usually consumed sparingly and during special occasions have been shown to become an integral part of regular dietary practices as a means to maintain specific ethnic traditions for certain immigrant groups.¹⁷ These considerations are more profound for migrant populations, given their minority status in a new dominant social structure. As with any immigrant group, within-group relationships are often a basis to maintain “native” health-related attitudes, behaviors, and relationships.¹⁸ Maintenance of traditional food-related practices persists among Asian Indian immigrants irrespective of length of time spent in the United States, although supplementation with “Western” foods may occur after a longer tenure.¹⁹

Most research on Asian Indian food-related behavior has focused on understanding the nutritional value of traditional Asian Indian diets and their association with disease disparities, rather than conceptualizations of sociocultural factors and food behavior. However, studies have found that larger social factors drive a unique conceptual model governing health and cardiovascular disease beliefs among Asian Indians in the United States.^{20,21} This model integrates spiritual, psychosocial, and physical factors into a holistic comprehension of disease prevention, health promotion, and pursuit of optimal well-being.²¹ Despite these theoretical underpinnings, very few studies have examined food-related behaviors among Asian Indian migrant groups, which take into account the sociocultural context in which these practices occur. Only one prior study in the United States has focused on a contextual exploration of the influence of culture on Asian Indian dietary patterns, but this research focused solely on decisions sur-

rounding health care and service delivery¹⁷; it did not explore the patterns of food-related behavior as they pertain to social function, imbued meaning, and cultural interpretations regarding impacts on health and well-being.

To address this gap, we conducted a study of Asian Indian immigrants to examine the interconnections between health, food, and illness. The key research question governing this research was: how do individuals who have migrated from India to the United States conceptualize and interpret the relationships between culture, food, and health? More specifically, we sought contextual and in-depth information about how older Asian Indians think about their culture, their knowledge of food choices, how they make choices within the options they have, and the social and cultural factors that go into their decisions about food, health, and illness. Elucidating these sociocultural factors is essential in creating culturally appropriate measures, collecting relevant behavioral and clinical risk factor data, and developing targeted interventions to reduce obesity-related disparities among the Asian Indian community in the United States.

METHODS

This research was part of a larger study of older Asian Indians and their risk of conditions related to obesity, namely diabetes and cardiovascular disease. The Culture, Health, and Aging in Asian Indian Traditions study was carried out in the San Francisco Bay Area from 2005 to 2006. This project used a focus group methodology to explore specific domains of inquiry, particularly examining beliefs and knowledge surrounding health risk (including sources of those perspectives), and decision-making processes pertaining to food-related behavior, including the influences of generational dynamics on individual and family dietary patterns. As the San Francisco Bay Area boasts one of the most densely populated Asian Indian metropolitan areas in the United States, this geographic vicinity was an ideal research site to conduct this exploratory research.^{13,22}

The theoretical approach employed in this study stems from a social constructionist perspective, which elicits individual constructions and refines them through iterative interactions.²³ Multiple sources of qualitative data are compared and contrasted to construct larger thematic classifications, which take into account the dynamic role of culture, its impact on food-related knowledge and beliefs, and negotiation between these multiple spheres of identity and dietary practices. The data collection process and analytic strategy generated respondent-driven themes surrounding exploratory domains of inquiry related to cultural contexts of food and dietary practices among Asian Indians.

Recruitment and selection of participants

Using convenience sampling, focus group participants were recruited through posted flyers at the ethnically specific community centers, Indian grocery stores, and faith-based organizations. To be eligible for the study, participants needed to self-identify as of Asian Indian ethnicity, be an immigrant to the United States, have sufficient proficiency in English, and be between 45 and 84 years of age.

Individuals meeting the inclusion criteria were assigned to 1 of 4 focus groups. To ensure that potential sex dynamics related to food-related practices were captured, 2 groups were single sex only (1 male group and 1 female group) and 2 were combined sex groups. Three focus groups were conducted at the India Community Center (Milpitas, California), and the fourth group was conducted at a participant's home (Fremont, California).

Data collection process

The focus group interview guide followed established principles of interviewing, structuring the guide, and question design.^{24,25} The formative nature of the research question warranted the use of a quasi-deductive approach in which descriptive and exploratory questions are utilized to qualitatively examine the contextual relationship between defined

phenomena of interest.²⁶ Domains of inquiry were structured around food-related beliefs, culturally framed evaluations of positive and negative types and preparation of food, social and cultural influences of food choices, and the effort and value placed on maintenance of traditional Asian Indian practices in a different normative social structure. Within each domain, the interview guide inquired about the contextual impact of dietary practices on health and explored the level of congruence between sociocultural rationales and health-promoting decisions and patterns of behavior. Each broad question was followed with 2 to 3 probes to generate more discussion within the group, if necessary. The interview guide was iteratively refined to include a small number of steering questions to confirm or more fully explore contexts that arose in prior focus groups, as well as to keep participants from straying off-topic.

The focus group discussions were conducted in English, and included a moderator, comoderator, a note taker/transcriber; a research assistant was also present at some of the groups. All research staff were women, with all but 1 being of Asian Indian ethnicity; the moderator was a white cultural anthropologist with expertise in Asian Indian cultural practices. All the participants spoke English, a common occurrence in mixed-region/language gatherings. Throughout the discussions, words in Hindi, Marathi, Punjabi, Gujarati, and Tamil, in addition to English, were used for foods and spices, and occasionally participants made side comments or pithy statements in Hindi or other Indian languages. Each group discussion lasted approximately 2 hours, and each session was digitally audio-recorded to preserve the authenticity of the data, and notes were taken by research team members. Audio-recordings were transcribed for content analysis. Comments made in Hindi were directly translated by a native speaker during the transcription process. The Principal Investigator, who was present at each of the 4 focus groups (who was also of Asian Indian descent and proficient in Hindi), verified the translations. Furthermore,

the Principal Investigator cross-checked transcriptions against the research notes to ensure accuracy and completeness, as well as capture nonverbal communications.

Data analysis

The analytic protocol employed an extensive and iterative peer-debriefing process, emphasizing a conscious and collaborative approach to theme extraction. This orientation relies on the value of the data itself to guide the credibility and confirmatory value of findings.²⁷ Data analysis began with a debriefing session by the research team after each focus group, facilitating a comprehensive evaluation of the process and the incorporation of revisions for subsequent groups when needed. Initial thematic categories were also discussed as they related to the overarching research question.

An initial set of transcripts was reviewed, re-analyzed, and discussed by 2 reviewers to ensure that emerging conceptualizations were present across focus groups and were not disconfirmed by other data collected in the focus groups; the same 2 individuals analyzed each set of transcripts. Employing a grounded theory approach, focus group transcripts were examined, initial categories for coding and theorizing were developed, and deeper levels of analysis were utilized to refine codes and discover organizing principles; these thematic categories were continuously reevaluated and refined throughout the analysis.²⁸ These categories were incorporated into evolving interpretations to develop an emergent thematic framework.²⁹ These “building blocks” facilitated an incremental and logical process to developing interpretive explanations.³⁰ Summary, analytic, and tabular representations were created for each transcript, and content analysts determined which themes were present across multiple focus groups.

Each focus group transcript was reanalyzed with these defined thematic categories as an organizing instrument, with a purposeful emphasis on ensuring that the research question was addressed. Combining, consolidating, or

rephrasing the categories enabled 1 overarching group of codes that emanated from all 4 groups. The transcripts were analyzed for a third time, with the audio-recordings serving as a tool to capture nuances not found in text; findings were organized in terms of concepts and themes that summarized the analysis, and interpretive explanations were developed.

FINDINGS

Each focus group consisted of 8 to 10 individuals, for a total of 38 participants. Table 1 provides demographic characteristics

Table 1. Demographic Characteristics of Asian Indian Participants

Participants	n = 38
Women, n (%)	20 (53)
Age, yr	67 ± 6
Birth country	
India, n (%)	34 (89)
Former Indian regions, ^a n (%)	4 (10)
Length of time residing in the United States, yr	27 (1-46)
Education, n (%)	
High school	2 (5)
Technical school/some college	3 (8)
Bachelor's degree	12 (32)
Graduate degree	21 (55)
Religion, n (%)	
Hinduism	29 (82)
Sikhism	3 (8)
Jainism	2 (5)
No affiliation	2 (5)
Marital status, n (%)	
Married	29 (76)
Widowed	8 (21)
Divorced	1 (3)

^aAt the time of birth, participants were born in the country of India (and self-identify as Asian Indian) before partition into the current nations of Bangladesh, India, and Pakistan. For purposes of accuracy, we report birth country as “former Indian region” if it is currently a non-Indian nation.

of the study sample. Approximately half of the sample population were women, and most had a Bachelor's degree or higher educational attainment. We did not identify unique results from either the sex-specific or mixed sex focus groups and therefore present the aggregate results.

Although the focus groups explored defined domains, emergent themes were derived directly from the data itself, as opposed to definitive and direct responses to the specific interview guide questions. The analysis generated common themes across all groupings, with purposeful efforts to examine contradictory or disconfirming cases.

Study findings reflected a temporal dimension, revealing the influence of emigration from India and interaction with a new dominant social environment. This does not imply that the cultural context of food and eating shifted from a "native" Indian perspective to the endorsement of beliefs predominantly found in the United States; rather, study results indicate a milieu in which food-related behaviors take on a unique meaning. Four major themes were generated from the data and were defined as follows: (1) "native" social and cultural understandings and influences of food-related behavior from India; (2) the intersection of "native" beliefs with American society and structures; (3) generational conflict; and (4) reconciling conflicting interpretations about health risk.

"Native" social and cultural understandings and influences of food-related behavior from India

Respondents described their evaluation of food-related behaviors within a unique cultural framework. Many of these assessments were based on beliefs preserved from value systems commonly found in India. Specific foods and cooking methods were defined as "good" and "bad," but a further distinction arose when participants used 3 Sanskrit terms for evaluating the properties of foods: *sattvic* (pure), *rajasic* (mixed), and *tamasic* (base). These 3 terms, found in

Indian scriptures, represent implicit cultural categories that participants used to describe and evaluate foods and their effects on one's mind, behavior, and health.

Male 1: There are *rajasic*, *sattvic*, and *tamasic* foods described in the Bhagavad Gita. With *sattvic* food, the mind and body are not excited . . . you can meditate and concentrate. *Rajasic* food is spicy, overcooked, and overspiced . . . it creates too much excitement and anger and worry. *Tamasic* food is the worst thing that can happen . . . like drugs.

Male 2: Your mind also gets violent if you eat *rajasic* food and gets peace if you eat simple foods.

These statements indicate a unique socio-cultural perspective in that each "category" of food is often ascribed a positive or negative connotation by participants of Asian Indian origin, and participant perspectives on differential cultural values for specific foods often differed from mainstream medical and nutritional evaluations found in the United States.

There was considerable conflict with values around vegetarian versus non-vegetarian foods in the discussion. Those who considered themselves "strict" vegetarians from their upbringing and lives in India were struggling with preserving this identity in the United States. Their beliefs about the negative aspects of eating non-vegetarian foods were complex. Some former vegetarians stated that eating meat had caused health problems for them. Others believe that introducing limited amounts of chicken and eggs into their diet has been necessary to supplement the amount of protein they consume. Those who define themselves as non-vegetarian consider the meats they eat as healthy, with the proviso that they remove excess fat from meat.

Male 2: In India most of the people are vegetarians. There, proteins are taken by beans and lentils . . . this is the main diet of Indian people. And regarding rice, south Indian and central part people, for most of the people the staple diet is rice to which they add lentils, *daal* soup or fish in Bengal, and in various parts of India, they take that for protein. But when we came here things changed. Some people are still following their traditions and are being strict vegetarian. Some people started

adding chicken and meat for the sake of protein. Some people have adapted to food habits here. In my case, I have started taking chicken so often, cheese so often, so that is the part of protein that we take. We did not take these in India.

This conflict is a key illustration of the issue of preserving sociocultural interpretations from India. Ideals and assumptions associated with vegetarianism continue to be shared and negotiated, by both vegetarians and non-vegetarians within their shared cultural framework.

There was widespread agreement about ideal or positive foods that contribute to health. The foods participants agreed upon as “good” for their health include balanced food such as those that are more alkaline, flour-based *chapattis* and *rotis*, multigrains, vegetarian-oriented *daal* (lentils), milk, *dahi* (yogurt), inclusion of *ghee* (clarified butter), and a whole host of organic foods. There was general agreement about preparation methods stated as bad or potentially harmful for health including some *chaat* (snacks) and other “junk” foods, deep frying and/or constant use of *ghee* in preparation, overcooking foods, adding too many spices to meals, processing/treating vegetables with pesticides, and overusing oil and salt.

There was also considerable discussion surrounding the value of sweets, both American (eg, donuts and cookies) and Indian (eg, *jalebis* and *gulab jamun*). Indian sweets were associated with “everything auspicious.” Sweets played a central symbolic role in participants’ sociocultural knowledge and approach to rituals and special occasions.

Female 4: Everything auspicious in Indian culture is related to sweets . . . when a woman is pregnant, a child is born, graduation, or good grades. We do not offer spice since that is evil . . . if you are happy have a sweet.

Female 5: In India every month, we have a celebration. Here also we celebrate all the festivals. There is something to eat sweet during these functions.

Male 4: Sweets. I can’t give them up. Sweets are important as far as those traditions are concerned.

Even though the amount is limited, my life is not worth living if I can’t have a *laddu* every day.

Conversely, participants indicated that giving up sweets would detract from the auspiciousness of these special occasions. To a limited extent, participants have stated that eating some Indian sweets in moderation can be good for health, and that some sweets are good for digestion (*jaggery*, *gur*).

Another illustration of this theme was the sacred interrelationship between food and religion in Indian traditions, which emerged from the analysis. Food was seen as a symbolic offering to God, expressing people’s reverence for the abundance and nourishment that a divine being provides through food. For example, sweets are inseparable from religious ceremonies. Another practice reported by respondents was that fasting was a highly valued practice in Indian religious traditions, with variations in their adherence to those in the United States.

Female 7: Like *Karva Chaut* . . . If we fast on Mondays, (your children) fast too.

Female 8: We keep fast during *Navrathra*. We fast for 9 days. We have a complete meal once. It’s tough. We eat fruits.

Fasting represented reverence, offering, and sacrifice, often to a deity, and was considered to purify and strengthen the individual. Many female respondents fasted to exert self-control and restraint over indulgent behavior, illustrate devotion to their husbands, and exhibit inner strength with respect to purifying the body. As a logical extension, participants linked their sacred religious beliefs with health and nutritional effects. In summary, the value ascribed to food—derived from historical accounts and religious function—was largely governed by a unique sociocultural framework.

Intersection of “native” beliefs and American society and structures

The topic of the impact of migration on participants’ health spanned a continuum of responses. Participants who had lived in

the United States for much of their adult lives stated that their health had improved, whereas those who had migrated more recently as elders talked more about health challenges. The longer-term immigrants related their earlier stresses in the United States to a less representative American society at a time when there was a small South Asian population and much less opportunity to maintain Indian traditions than there is now. There was widespread idealization of their backgrounds and the traditions around food. At the same time, most people's lifestyles have changed so much that they recognize that they cannot eat the way they did when growing up in India.

Female 11: Whenever my grandparents worked hard in the field and they ate every day a simple meal, and they lived a long life. Occasionally, we add fried and sweets like [for] Diwali. But we generally ate simple foods and they lived a long and a healthy life. Nobody had diabetes or blood pressure. That was my grandfather's age . . . my belief is that if you work hard and burn off your calories, like here we do not go to the field, but if we go for a walk, and eat simple food like *daal*, *roti* or *chawal* (rice), we eat simple food and fresh fruits and fresh vegetables is better uncooked, but here, it is so hard to practice that because we have the refrigerator.

As a result, a newfound concern about unexpected weight gain while living in the United States arose for both men and women. Many were unsure why they had gained weight, but most saw it as negative for their health. Some participants believed that their diet since living in the United States had caused them to gain weight. Other explanations for unwanted weight gain included weather change, food more enriched here with nutrients and vitamins, changes in metabolism because of aging and eating out, eating cheese, and increased consumption of breads. Some argued that they were not eating more but that the same foods made them gain weight in the United States that would not or did not in India.

Female 7: I had a problem with weight too. I was thin always. I got so big when I came here. I re-

duced 22 pounds since last year . . . trying to reduce more. Although I am not eating more here, the same food adds on weight here. I try to take swimming classes and try to lose weight.

Male 8: In the time period, most of us came to this country; the availability of Indian ingredients here was next to nothing. So, we adapted and changed ingredients and changed our cooking styles to some degree. But once Indian ingredients started to be available, it is a pleasure to be able to cook with Indian ingredients. It is fresh and I think our food is characterized by fresh food, beans, fresh vegetables cooked the same day, bread made the same day . . .

Respondents indicated that they had modified previously sacred culinary traditions and eating practices with their incorporation of current medical and nutritional sources of knowledge. Given the high value placed on eating home-cooked foods on a regular basis, respondents conveyed an interest and willingness to explore new culinary techniques in recognition of increased visible risk for adverse health, such as weight gain. For example, the goal of decreasing frying has demonstrated that participants are flexible in experimentation, variation, and expansion of "native" practices given their newfound experiences.

The refrigeration and reheating of leftovers evoked considerable criticism. Many believed that refrigerators and freezers cause negative health consequences in food. Food that was cooked the previous day and was reheated was considered bad for health. As an illustration of the ascription of social class on food-related behavior, many highlighted that leftovers are uncommon in India because any remaining food would be given to domestic servants or, if people are unable to afford hired help, they most probably would not be "burdened" with extra food.

Male 6: Any processed food is not good for your health. Only fresh food, cooked and eaten within a couple of hours after cooking, you should eat. Here, it is not true. We get into the habit of storing food and eating them 2 days later. It's not good for us.

Male 2: At our time there used to be no electricity and no refrigerator and hence you cannot save food for the next day. So you have to have fresh food.

The concept of identity formation was evident when discussing the influence of the new dominant society on traditional practices and behaviors.

Male 8: Normally, in Indian diet, we do not eat fried foods daily. Fried foods are saved for special occasions, maybe once a week or a celebration. So, the frequency of eating is different here than it is over there. Here, you can do whatever whenever you feel like it. If you want, you can eat *pakodas*, you can eat them daily. So, we recognize it is harmful, but it is a celebratory thing; so, all celebrations will require lots of fried food. Otherwise it is not fun. But it is recognized that you should not do it every day. So it is good and bad.

Although there is tremendous regional diversity in Asian Indians' daily diets, when ethnic snacks and sweets were served at large cultural festive occasions, parties, gatherings, and religious ceremonies, these foods gain a pan-Indian symbolism.

Generational conflict

Intergenerational conflicts around ingredients, cooking styles, and values were highlighted by this immigrant study sample. Views of generational differences regarding eating habits and values about food in participants' families indicated that reciprocal influences between themselves and their children include "positive" characteristics, such as encouraging more health consciousness, and increasing the quantity and quality of meals prepared at home. However, respondents did point out that many disagreements revolved around the greater use of processed and prepackaged foods. They described their children's habit of eating food that was days or weeks old from the refrigerator and reheating and eating as abhorrent to them. Nevertheless, respondents were cognizant that their children were raised in a different social milieu and, as such, did not expect their offspring to cook Indian food daily or in as a traditional manner as themselves. Most did,

however, describe their children as loving their food and wanting to eat their parents' Indian cuisine. They tended to view their grandchildren as eating more "outside food" and being considerably more disconnected from traditional Indian food habits than their children. Despite this "dilution" of cultural attributes, concerted efforts were made to expose generations of Indians born in the United States to "normative" patterns of the social value ascribed to preparing, offering, and consuming food.

Female 14: I have 2 daughters. My oldest daughter is married to an Indian and cooks Indian food. My younger daughter is living by herself; she does not make Indian food. She is very much into health.

Female 11: The way I have solved the problem is because we are 4 generations . . . we don't want to rule your life. We built a nice new house. I told them no meat in this house. If you do, I might leave. You can eat out as much as you want. Occasionally they do go and eat out. But they have not brought meat in the house for the last 15 years. I don't tell them not to eat meat. You can eat what you want. One son lives with me. When they feel like eating home cooked meat, he goes to the other son's house and eat. They asked me if they can barbecue in the yard, I said no. Not even in the yard.

There were differing views of what younger people do eat; whether they believed it was better or worse was unclear. Participants related more "Western" characteristics to changes in the priorities of their children and the demands imposed by a dramatically different social structure from their native India. Many described differences between the manner and length of time preparing food a generation ago and the present. The contention that fewer of their meals are created with raw ingredients was a common source of debate, conflict, and variation.

Male 8: One thing is that because of the change in time nobody cooks the same way as they used to. Now, even for Indians, we do not need to cook the same thing. We just go and buy it from the grocery store. That is the huge difference between the time spent in the kitchen now and then.

Adult children have contributed to the expansion of many participants' culinary tastes and skills. Some stated that younger people do influence the older people because they eat multiethnic foods and a greater variety. Mothers have learned about new foods from their children/daughters. New foods have been suggested as "healthy foods"; for example, 1 woman described how her daughter told her about tofu and soybeans as sources of protein, complementing *daals* for the same purpose.

Female 3: Our children are driving our change. We have multinational foods . . . we experiment with foods because of their taste . . . they are driving us . . . we have modified to blend in to taste. We have 2 Indian dishes . . . and (a salad, a pasta dish, and a blend of others) on our table.

The picture of 2 or 3 generations of 1 family, who do not live in the same household but who eat together regularly, provides a glimpse of the future of food trends in the Indian community in the United States.

Reconciling conflicting interpretations about health risk

In discussing health risks—specifically, heart disease—participants derived their knowledge from a wide range of current sources in the United States from nutritional and medical spheres. At the same time, they also indicated that they were "rediscovering" ancient Indian knowledge through their experiences in the United States as respondents cited recommendations from popular media to reduce intake of oil and ensure adequate consumption of proteins. They indicated knowledge generated from the Internet and visits to clinicians for preventive purposes. Participants acknowledged that people of South Asian heritage were at greater risk for cardiovascular illness, and attributed the causes of heart disease to stress, heredity, and other factors, of which food was considered very important. Many conveyed a proactive approach to controlling levels of glucose and other biomarkers associated with Indian health disparities.

There was considerable disagreement among participants on the issue of disease causality as well as different ideas about approaches and solutions. Some expressed skepticism that obesity caused heart attacks because many community members experienced adverse cardiovascular events despite not exhibiting any form of obesity. Some argued that destiny, or *karma*, determines what will happen, and did not indicate an intention to carry out the medical advice for reducing weight and cholesterol.

Finally, a significant finding was the utility of food within traditional medical frameworks found in India. Many participants argued for the effectiveness of folk wisdom, home remedies, and ancient Indian medical frameworks. One key illustration was the role of food-related behavior in Ayurvedic medicine.

Male 6: No, that system is in Ayurveda. They believe that some foods are supposed to heat and some foods are supposed to cool the body.

Male 7: Heating does not mean the increase in the temperature. It means the effect it has on the body. It is a physical thing. For example, when we have a fever, we boil *tulsi* (basil) leaves and make a tea out of it. It reduces the temperature. It does not remove the cause but may remove the symptoms . . . If you believe in heating and cooling, if you take cooling stuff, it goes away. For example, if you have an allergic reaction, you can take sugar mixed with water or sherbet any flavor you like, removes the allergic reactions.

Many described the creation and purpose of food-based ancient medicines, and the regular use for themselves, their children, and their grandchildren in conjunction with their use of doctors and prescription and over-the-counter drugs. The medicinal value of spices was overwhelmingly agreed upon by respondents. The unique combinations of spices and herbs that are used skillfully in cooking Indian food originate from the health-oriented properties that each is considered to possess within a "native" system of illness and medicine. Given that these characteristic preparations are also enjoyable to eat, these "native" interpretations remain very important in people's food

preferences. Many discussed possessing a complex typology listing key spices, uses, topical applications, illnesses that are ameliorated, and combinations for use as home remedies.

Female 4: All spices have some medicinal value. Some things are known as grandmother's spices. If you know about spices from your grandmother and mother, you can avoid going to the doctor. I feel you have to watch and observe yourself. And make use of the spices and you will be better.

Perhaps exuding reverence to elders, a large number of participants stated that their knowledge of the intersection between food and health came from their mothers. When asked whether these Indian beliefs and practices were learned in childhood or rediscovered in older age, a response emblematic of a common sentiment was that they “are both remembering and reading anew; you can call it a relearning process.”

Male 3: In the 40s and 50s, every time we got hurt, my mother used to take turmeric and make a mix and apply on it. When we grew up like when we were in college age, we used to make fun of it. We used to say that these are old wives' tales and they are making us do this. Now we know that it is right.

In the face of “scientific” information, respondents did not simply dismiss their native beliefs in lieu of more “credible” sources. Rather, they seemed to reinterpret their understandings within the lens of Western biomedicine and allowed for diverse and even contradictory differences between “native” and “Western” models of health beliefs. Especially in light of growing popularity of homeopathic or naturopathic approaches in the United States—such as Ayurveda—participants were keen to draw attention to Indian origins of such systems. Nonetheless, there was an increasing awareness that perhaps modification, albeit slight, of their traditional practices might ultimately result in a more positive outcome.

DISCUSSION

To the best of our knowledge, this is the first study to qualitatively investigate the sociocultural meanings and values ascribed to food and dietary practices among Asian Indians in the United States outside a clinical setting. Although other research has focused on case studies in singular cultural environments, such as beliefs and dietary consumption patterns during ethnic festivals, this study complements and enhances existing literature by illustrating the cultural ideals ascribed to certain foods, on the basis of evaluations of processed or frozen preparations and potential discord with the value placed on fresh items and home cooking. The ceremonial attachment to dietary practices, such as auspicious foods and the role of fasting—often tied to religious doctrine—had significant impact on food-related behavior among study participants. The presence of certain Asian Indian foods (eg, *samosas*, *pakorras*, *gulab jamun*, and *laddus*) in social gatherings took on a cultural significance greater than a simple preference for taste; such culturally specific food behaviors potentially function to form intragroup cohesiveness while externalizing a unique Indian identity within the larger American society. Accordingly, health was acknowledged to be affected by “newer” food choices and easier access to traditional fare that may have been previously reserved for special occasions but served as a mechanism for identity maintenance in a new host society, despite awareness of higher risk for cardiovascular disease and diabetes among Asian Indian migrant groups. Finally, this study elucidates how many sources of information—some scientific yet others social in nature—were used to ultimately arrive at decisions related to frequency, preparation, and timing of foods consumed.

This research expands upon similar studies conducted in Britain and Canada, which solely focused on cultural contexts of food-related behavior of a specific regional subgroup (eg, Punjabis) or sex. Our results confirm many patterns found in other studies, such as the

inextricable connection of food to preservation of cultural heritage, the ascription of medicinal value to specific preparations and spices, and the representation of Asian Indian identity through dietary practices.³¹⁻³³ The notion that certain types of food have values embedded in spiritual belief systems was a finding also consistent with qualitative studies outside the United States.^{34,35} This study parallels others in highlighting the influence of generational transmission of knowledge about dietary practices and perceived importance in relation to health. For instance, studies in Canada and Britain illustrate how the conflict between Indian immigrants and their second-generation offspring drives a dietary profile, which hybridizes traditional Indian dietary patterns with an infusion of healthier alternatives.^{31,33} These patterns were clearly evident in this study, thus lending credence to a unique context of dietary practices among Asian Indian migrant groups. In fact, our analyses are consistent with the South Asian holistic conceptualization of health and disease put forth by theorists and researchers and support the notion of a unique ethnic identity in the multicultural San Francisco Bay Area.²¹

Understanding the social and cultural contexts of dietary practices among Asian Indians in the United States has important implications for health research and practice. This migrant community is well aware of their increased risk for obesity-related disease. As such, usual strategies to raise risk awareness targeting individuals may not be effective. Rather, recommendations for behavior modification must take into account cultural beliefs to ensure that the social value ascribed to food is not dismissed. For instance, dense caloric foods, which are highly valued for rituals, ceremonies, and identity, are unlikely to be eliminated in this community. Interventions stressing alternative preparations or reducing the frequency and/or quantity of consumption yet still preserving core cultural significance may hold the highest potential for success. Although some health-oriented organizations have developed cookbooks, fact sheets, and

other materials, which provide valuable information for culturally appropriate behavior modification, these resources presume that community members will actively seek them for use and, thus, do not impact the large segment of Asian Indians who are not actively contemplating behavioral change.

The conceptualization of food-related behavior originating from Indian philosophical and medical systems contributed to how participants live their lives, and seemingly influence their decisions related to their health and illness. These interpretations often came into conflict with mainstream perspectives in the United States, as they pertain to food and health. Accordingly, health care providers serving large Asian Indian populations must ensure that their messages provide recommendations that can effectively be adopted while not eliminating the core of traditional values. Practitioners must be sensitive to the practical and social feasibility of suggested changes and provide alternatives that are realistic and consistent with culturally valued patterns. Such efforts have been shown to have efficacy in other communities with high value ascribed to dietary practice.³⁶

This study demonstrates the multiple sources of information availed by Asian Indians for social and health purposes. Thus, interventions cannot be sustained if they solely rely on the health care system to mitigate obesity-related disparities. Successful interventions must build upon the existing foundation of protective factors already present within the Asian Indian cultural context. On the basis of findings from this study, health professionals might reinforce the community's reliance on specific teachings from the Bhagavad Gita to emphasize the moderate or light consumption of certain foods, in concert with recommended dietary guidelines. In addition, dissemination of culturally appropriate and relevant health information must galvanize ethnically valued vehicles of communication. These include cultural events of value, ethnic media, faith-based organizations, and other environments in which Asian Indians organically coalesce.

Moreover, health messaging must take into account the broader collective orientation of Asian Indian communities and *stress the effect on family and community* when promoting lifestyle changes. A community health worker framework, in which trusted opinion leaders increase awareness by distributing information, resources, and referrals in cultural settings, may be promising to endorse and create the necessary level of change. This model has been shown to be effective, especially among Latino migrant groups, and successes from these efforts could be applied to the Asian Indian community.³⁷ Moreover, this approach emphasizes a community-based approach to research and practice, and might provide a valuable source of feedback to inform more effective intervention strategies.

As with most qualitative research, our findings are not generalizable to communities beyond the study population. Given that Asian Indians have distinct social and demographic profiles in ethnic enclaves located around the United States, our results may illustrate a community context specific to the population in Northern California. Similarly, given the importance of religion in prescribing dietary practices, the overrepresentation of Hindus may have attenuated a full contextual exploration of other Asian Indian faiths. However, we were gratified to see that many of our emergent themes echoed conceptual findings from other countries, which had substantial representation of demographic diversity. Although further research with larger representation and in other ethnic enclaves is warranted to enhance our findings, the

triangulation of data from other sources lends credence that patterns hold applicability to Asian Indians in the United States.

CONCLUSION

Health disparities by race and ethnicity are an increasing public health concern in the United States. For Asian Indians, behavioral risks are especially important to understand given the disproportionate burdens of cardiovascular conditions, diabetes, and metabolic disorders. This study demonstrates the importance of elucidating the social and cultural contexts in which dietary behaviors exist, especially when those considerations contradict mainstream approaches to health promotion. It also provides valuable information to develop quantitative measures for empirical assessment, develop and evaluate targeted interventions, and mobilize health professionals and nontraditional stakeholders.

In addition to cultural tailoring for individual behavior change, this study illustrates the need for an enhanced framework, one which incorporates sociocultural belief systems, acknowledges multiple sources of information diffusion, and ensures that intervention targets take into account orientations that value family and community ahead of the individual. To ultimately reduce the increasing burden of obesity-related diseases among Asian Indians in the United States, a comprehensive intervention strategy must be multifaceted in nature to ensure compatibility and success within a cultural milieu.

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