TBM

ORIGINAL RESEARCH

Influence of organizational and social contexts on the implementation of culturally adapted hypertension control programs in Asian American-serving grocery stores, restaurants, and faith-based community sites: a qualitative study

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Cite this as: *TBM* 2020;10:1525–1537
doi: 10.1093/tbm/ibz106

Abstract

Hypertension affects a third of U.S. adults and is especially high among Asian American groups. The Racial and Ethnic Approaches to Community Health for Asian AmeRicans (REACH FAR) project delivers culturally adapted, evidence-based hypertension-related programs to Bangladeshi, Filipino, Korean, and Asian Indian communities in New York and New Jersey through 26 sites: ethnic grocery stores, restaurants, and Muslim, Christian, and Sikh faith-based organizations. Knowledge of the implementation mechanisms of culturally adapted programs is limited and is critical to inform the design and execution of such programs by and in community sites. We applied four categories of the Consolidated Framework for Implementation Research—intervention and individuals' characteristics, inner and outer setting—to analyze factors influencing implementation outcomes, that is, site leaders' perceptions about adopting, adapting, and sustaining REACH FAR. We conducted semistructured interviews with 15 leaders, coded them for implementation outcomes, and recoded them to identify contextual factors. Our findings show that REACH FAR resonated in sites where leaders perceived unhealthy diet and lifestyles in their communities (*intervention characteristics*), sites had historically engaged in health programs as a public-service mission (*inner setting*), and leaders identified with this mission (*individuals' characteristics*). Site leaders strived to adapt programs to respond to community preferences (*outer setting*) without compromising core objectives (*inner setting*). Leaders noted that program sustainability could be impeded by staff and volunteer turnover (*inner setting*) but enhanced by reinforcing programs through community networks (*outer setting*). The findings suggest that to facilitate implementation of culturally adapted health behavior programs through community sites, interventions should reinforce sites' organizational commitments and social ties.

Keywords

Culturally adapted, Hypertension, Nutrition education, Racial/ethnic minorities, Qualitative methods, Implementation research

Implications

Practice: Culturally adapted, evidence-based strategies for nutrition education and hypertension screening and control targeted to racial/ethnic minorities can be implemented through grocery stores, restaurants, and faith-based organizations—community sites where people shop, eat, and congregate—in ways that respond to community preferences and yet meet health program objectives.

Policy: Policymakers who seek to expand the reach of evidence-based, hypertension management programs among racial/ethnic minorities should ensure that implementation strategies enable sites to flexibly adapt programs to align with sites' mission, resources, and community preferences, while reinforcing programs through the community's interorganizational networks.

Research: Future research should assess the implementation mechanisms and effectiveness of strategies to *sustain* nutrition education and hypertension management programs targeted to racial/ethnic minorities through community sites, focusing particularly on strategies to work around sites' limitations in financial and human resources and to reinforce programs across the community's wider organizational networks.

INTRODUCTION

Hypertension affects over one-third of adults in the USA and is a major risk factor for cardiovascular disease, a leading cause of death in the USA [1]. Affordable, effective treatment strategies and behavioral modifications for hypertension control exist, and evidence-based policy, systems, and environmental (EBPSE) approaches for hypertension control and cardiovascular disease prevention have been implemented at national and local levels [2–4]. However, less than half of individuals with hypertension have it under control [5,6]. Rates of poor hypertension control and complications remain

high in some racial/ethnic groups. For example, studies suggest that among normal/underweight people, non-Hispanic black and Asian adults have approximately six times greater odds of hypertension than non-Hispanic white adults [7] and that foreign-born South Asian adults (born in Bangladesh, India, Myanmar, Nepal, or Pakistan) with hypertension are younger than and report having poorer diet quality than non-Hispanic white adults with hypertension [8].

Asian Americans (AAs), who comprise 5.6% of the overall U.S. population and are the fastest growing racial/ethnic group, experience an especially large burden from hypertension and cardiovascular disease, with substantial variation in prevalence across ethnic subgroups [9–11]. National and regional data on AAs are often reported in the aggregate, though there have been recent efforts to highlight unique subgroup differences [8,12]. For example, studies have found that, among AAs, Filipino Americans have higher rates of high blood pressure and lower hypertension control rates [13,14] and Asian Indians have among the lowest rates of physical activity [9,15–19]. Medication adherence, a critical component of hypertension management, has been found to be lower among Korean and Filipino groups compared to Chinese and Japanese groups [20]. A national survey found that among AA groups, hypertension prevalence was higher among Southeast Asian immigrants (combining those from Cambodia, Hong Kong, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Taiwan, Thailand, Vietnam, and others but not including China, Korea, and Japan) and prevalence of adjusted overweight/obesity was higher among immigrants from the Indian subcontinent (Afghanistan, Bangladesh, India, Nepal, Pakistan, Sri Lanka, and others) [21].

Several New York City-based studies have found elevated rates of hypertension among South Asians. One study found that compared with Chinese New Yorkers, South Asian New Yorkers were at higher risk for overweight/obesity and hypertension, and South Asians were more likely than Korean New Yorkers to have ever been told by a health care provider that they had hypertension (28% vs. 16%) [22]. Another study found that age-adjusted prevalence of hypertension was 27% among South Asian immigrants (combining those from Bangladesh, India, Myanmar, Nepal, and Pakistan) compared to 23% in non-Hispanic white adults in New York City [8]. Challenges remain in obtaining prevalence of hypertension and related risk factors among South Asian subgroups (e.g., Bangladeshi, Pakistani, and Asian Indian groups), though some community-based studies in New York City have reported elevated rates of hypertension among Bangladeshis [19].

Among the risk factors for hypertension is an unhealthy diet, which can stem from dietary acculturation among immigrants. That is, as racial/ethnic minority groups adopt the nutritional practices and diets of their host countries, they may deviate from healthier native diets as they experience cultural, socioeconomic, psychosocial, lifestyle, and social-support changes [23,24]. High-quality data on this issue are limited: dietary measures are often not developed and validated for Asian immigrants, and variables such as duration of residence, immigrant generation (e.g., first-generation or later), country of origin, socioeconomic status, language, and religion are not sufficiently included in analyses [12,25]. Yet available studies show, for instance, a correlation between dietary acculturation among first-generation Filipino immigrants and higher fat intake [26]. A study in the New York metropolitan area found that low-acculturated Korean Americans tended to consume more rice, fish, eggs, kimchi, spinach, persimmons, and white or brown sugar in coffee or tea (among other foods), while the high-acculturated group tended to consume more bread, cereal, spaghetti, ham, green salad, sweetcorn, chocolate, candies, and diet soft drinks [27]. One study in a cohort of middle-aged and older South Asian immigrants found that a longer length of residence in the USA was associated with lower daily intakes of energy, carbohydrate, dietary fiber, and glycemic index and load and higher intakes of fat, protein, and dietary cholesterol [28]. A longer length of U.S. residence was also associated with higher intake of alcoholic beverages, fats, and oil and lower intakes of beans and lentils, breads, cereals and grains, rice, as well as starchy vegetables and sugar, candy, and jam [28]. Diversity in cultural beliefs, language, and socioeconomic status among AAs and inaccessibility to culturally and linguistically appropriate care and health information can impede successful implementation of EBPSE strategies [29–31].

One initiative that addresses this diversity is the Racial and Ethnic Approaches to Community Health for Asian AmeRicans (REACH FAR) project. REACH FAR is led by a coalition of an academic institution, community-based organizations, and state and local health departments who collaborate to culturally adapt and implement hypertension management and healthful behavioral change programs for AA subgroups in the New York/New Jersey Metropolitan area [32]. The project integrates multisector EBPSE approaches to address hypertension control in four AA communities—Bangladeshi, Filipino, Korean, and Asian Indian. It builds on evidence-based or evidence-informed cardiovascular disease prevention and hypertension management strategies to enable lifestyle changes and health promotion, specifically by improving access to environments with healthy foods and beverages and enhancing systematic linkages to community-based resources, including hypertension management health education material and health coaching efforts in New York/New Jersey. Programs were

introduced at 26 sites—grocery stores, restaurants, and faith-based organizations (FBOs)—that serve AA subgroups. Informed by the Ecological Validity Model, which specifies eight domains for cultural adaptation (viz., language, persons, metaphors, content, concepts, goals, methods, and context) [32], REACH FAR adapted evidence-based hypertension control strategies by, for example, translating health education material for Bengali-, Korean-, Tagalog-, and Hindi-, Urdu-, and Punjabi-speaking communities; devising ethnically relevant food illustrations and health meal planners for each of the target ethnic groups; and integrating social norms into communication material, such as illustrations of women in *hijab* doing physical exercises when educating the Bangladeshi community. Further details of the cultural adaption process of evidence-based strategies have been published elsewhere [32].

Culturally adapted health behavior programs have been evaluated for their health impact, but knowledge of the implementation process, including knowledge of the ways in which program executers deliver cultural adaptations in the course of community-engaged programs, is limited [33–35] and is especially lacking with regard to programs for AA communities [34,36]. This knowledge is needed to disseminate evidence-based interventions for hypertension prevention and control [37] and to inform the future design and execution of behavioral health programs by and in community sites serving racial/ethnic minorities. Our study generates knowledge about how organizational and social contextual factors, such as features of the sites' missions, resources, and relations with the communities they serve, influence the implementation of hypertension prevention and control programs in racial/ethnic community sites. To do so, we analyzed REACH FAR implementation in diverse AA-serving community sites. Drawing on the Consolidated Framework for Implementation Research (CFIR) [38], we examined how organizational and social contexts shaped specific implementation outcomes, namely the adoption, adaptation, and perceived sustainability of these strategies, across sites.

METHODS

Qualitative research approach

We used a case study approach to examine REACH FAR implementation as perceived by site leaders and to explain their experiences and views in relation to the project's real-life contextual conditions [39]. The case study approach is relevant to answer "how" questions, such as asking how a program has (or has not) worked, which requires researchers to link operational and contextual details [39]. In our research, the REACH FAR project is the case under study, and the project's various implementing sites reflect the contextual diversity of AA community-serving organizations. Previous research suggests that wide-ranging factors, such as organizational resources, leadership capacity, and connections to the wider community, can influence the implementation of community-based programs [34,36,40]. To systematically relate context to outcomes, we draw on the CFIR, described further below.

Researcher characteristics and reflexivity

Study team members are affiliated with REACH FAR coalition partner entities, some of whom served as key liaisons working directly with the implementation sites, including meeting with site leadership to determine interest and feasibility to implement the program. The partners' integration with the community and familiarity with the implementing sites helped to reinforce the strategies at multiple levels [32]. However, while some study team members were actively involved in this strategic and relationship-building work, none were involved in day-to-day implementation. The analysis is informed by the study team's collective deep knowledge of sites and communities, but the data are collected through key-informant interviews (described further below) conducted, transcribed, and coded by trained researchers not involved in REACH FAR design or liaison roles and without on-site participation.

Conceptual framework

The CFIR is a framework to aid in explaining implementation outcomes obtained in particular contexts to develop theories about what works and why across settings [38,41]. It comprises five constructs or domains of factors hypothesized to influence implementation: intervention characteristics (here, features of REACH FAR's hypertension prevention and control programs); inner setting (features of the implementing sites); outer setting (features of the AA subgroups, networks, and organizations beyond the implementing sites); characteristics of individuals in the implementing organization (site leaders, managers, staff, and volunteers); and process (how individuals plan, engage, execute, monitor, and reflect upon the intervention). We examined elements from the first four domains. We did not examine "process" since our focus was not on the experiences of REACH FAR coalition partners who developed, planned, and monitored the project but on the experiences of actors who executed REACH FAR programs on-site. Moreover, studying ground-level "process" ideally entails attending to the dynamic, reflective process of launching and steering a new program, which we did not observe on-site.

We examined the influence of the four CFIR domains on the selected implementation outcomes: adoption, meaning actors' intention or motivation to deploy the intervention; adaptation, referring to modifications actors make to the intervention; and perceived sustainability, meaning actors' perceptions about whether and how the intervention can be maintained or institutionalized in ongoing operations [41–43].

Study setting: REACH FAR community partners, sites, and program components

REACH FAR's community partners—Diabetes Research, Education, and Action for Minorities coalition (DREAM), Kalusugan Coalition (KC), Korean Community Services of Metropolitan New York Inc. (KCS), and UNITED SIKHS (US)—served as gatekeepers to target communities and played an integral part in selecting implementation sites, which were identified based on existing relationships with community-based organizations and coalition group discussions [32]. In total, 26 sites implemented REACH FAR programs: 12 FBOs representing religious houses of worship, including mosques, churches, and gurdwaras (a gurdwara is a place of worship and gathering for the Sikh community, which is predominantly Asian Indian in origin); 8 restaurants; and 6 grocery stores. All sites were located in neighborhoods with high concentrations of target communities in the New York/New Jersey area [44].

Faith-based sites implemented two program components (Table 1): strategies to increase access to healthy food and beverages at communal meals based on policies set by the New York City Food Standards (https://www1.nyc.gov/site/doh/health/health-topics/nyc-food-standards.page) and Keep on Track, a blood pressure monitoring program developed by the New York City Department of Health and Mental Hygiene (NYC DOHMH) [32]. Retail sites (grocery stores and restaurants) implemented policies adapted from the Shop Healthy program developed by the NYC DOHMH (http://www1.nyc.gov/site/foodpolicy/help/shop-healthy.page) and menu labeling initiatives (Table 1). REACH FAR provided technical assistance, training, and resources to the implementing sites, including a modest honorarium ($300–500 per site) for project participation, trainings on program and policy implementation, and personnel assistance from REACH FAR staff during program start-up. Of the 26 initially enrolled sites, 3 of the 6 restaurants and 2 of the 8 grocery stores discontinued participation within 8 months, and 1 of the 12 FBO sites discontinued at around 12 months. Thus, 20 sites participated for the full duration (24 months) of the REACH FAR program.

The participating sites selected and implemented different sets of program components from options available under REACH FAR (Table 2). Research team members conducted quarterly on-site checks to validate the program components that each site offered.

Study sample and recruitment

All 20 sites that completed the program were invited for interviews. Invitations for interviews were sent via email. Of the 20 invited sites, 15 agreed to be interviewed (Table 3). All 11 invited FBO sites agreed to interviews; at one FBO site, interviews were conducted with 2 informants. Of the 3 restaurants invited, 1 agreed, and of the 6 grocery stores invited, 2 agreed to interviews. One interview each was conducted at restaurant and grocery store sites. Since most of the sites that completed the program and agreed to interviews were FBO sites, informants at FBOs make up the majority of our interviewees. Coalition partners helped to identify informants at each site and organize the interviews. Individual interviewees—key informants—were either site leaders, that is, managers or owners at the sites, or were site staff or volunteers, purposively selected by site leaders for their close involvement in the program (Table 3). Interviewees, thus, held

Table 1 | REACH FAR program components

Program components	Intervention options for implementing sites
Nutrition strategies and Keep on Track blood pressure monitoring program	
Faith-based sites 12 sites enrolled; 11 sites completed the program	Adopt at least one nutrition policy change out of six related to food and beverages served at on-site communal meals. For example, offer choices of fruit, leafy green salad or fresh vegetable, whole grain options, low-fat milk or yoghurt, and low-sodium dressings and condiments. Make water available at no charge at meal time. Hold monthly hypertension screenings so participants can have their blood pressure checked and recorded by a program volunteer, receive one-on-one health counseling, and receive culturally tailored and translated program handouts to improve healthy behavior. Program volunteers to advise participants to take their blood pressure medication as directed by their health provider.
Strategies adapted from NYC's Shop Healthy program and menu labeling initiative	
Restaurants 6 sites enrolled; 3 sites completed the program	Implement at least one of six strategies related to menu labeling and options, such as highlighting healthy menu choices, expanding healthier menu options, offering lower pricing or discounts for healthier options, decreasing access to high-sodium products, and decreasing portion sizes.
Grocery stores 8 sites enrolled; 6 sites completed the program	Implement at least one of four strategies to increase sales of healthier foods through price incentives, product placement, product promotion and advertising, and greater product choices.
Total participating sites = 26 Of the 26 initially enrolled sites, 20 completed the full program (24 months).	

Table 2 | Sites' implementation of intervention options

	Nutrition options							Blood pressure monitoring
Faith-based sites	Fruit	Leafy green salad	Fresh vegetables	Whole grain options	Low-fat milk or yogurt	Low-sodium dressings and condiments	Free water	Monthly screening, individual counseling, culturally adapted handouts
1	x	x	x		x		x	x
2	x	x	x		x		x	x
3	x	x	x		x		x	x
4		x	x	x	x		x	x
5	x	x	x	x	x	x	x	x
6	x	x	x	x	x	x	x	x
7	x	x	x		x	x	x	x
8	x			x		x	x	x
9	x	x	x	x			x	x
10	x	x	x	x			x	x
11	x	x	x	x			x	x

	Nutrition options				
Restaurants	Highlighting healthy menu choices	Expanding healthier menu options	Offering lower pricing or discounts for healthier options	Decreasing access to high-sodium products	Decreasing portion sizes
1	x		x	x	
2	x	x		x	
3	x	x		x	
4	x	x			
5	x		x		
6	x		x		

	Nutrition options			
Grocery stores	Price incentives	Product placement	Product promotion and advertising	Greater product choices
1	x	x	x	
2	x	x	x	
3	x	x	x	x

Table 3 | Interviewees and implementing sites

		Number of interviews at types of sites		
	Communities served	Faith-based	Restaurants	Grocery stores
DREAM Coalition	Bangladeshi, Muslim	2		1
Korean Community Services	Korean, Christian	3		1
Kalusugan Coalition	Filipino, Christian	3	1	
UNITED SIKHS	Asian Indian, Sikh	4		
Total number of interviews = 15		12	1	2

a leadership role in executing the intervention and ability to speak to the initial adoption, implementation challenges and successes, and prospects for sustainability of the program on-site.

Data collection instruments and methods

The interview guide, which remained unchanged for all interviews, covered questions on the motivation and partnerships that led to program adoption; experiences with the implementation process, including staff involvement, organizational resources, and program delivery; perceived efficacy of the program; and intentions and resources to sustain the program. Interviewees were asked questions such as: What was your role in starting the program at your organization? Why did you decide to get involved in the program? How do you think the organizational structure of your organization helped or hindered the start of the program? Does your organization plan to continue the program—why

Table 4 | CFIR constructs and subconstructs associated with implementation outcomes

CFIR construct	CFIR subconstruct	Implementation outcome
Intervention characteristics	*Evidence* that the intervention will have desired outcomes	Adoption
	Adaptability of the intervention	Sustainability
	Cost of the intervention and of implementing it	Sustainability
Outer setting	Extent to which community *needs* are known and prioritized	Adaptation, sustainability
	Cosmopolitanism or extent of interorganizational networks	Sustainability
Inner setting	Organizational *culture* or norms, values, and basic assumptions	Adoption
	Broadly, *readiness for implementation* or organizational commitment to implement the intervention	Adoption
	Specifically, organizational *resources* dedicated to implementation and ongoing operations	Adaptation
Characteristics of individuals	*Individual identification with the organization*	Adoption

or why not? Interviews averaged 30 min and were conducted by trained bilingual researchers from the study team who were not involved in program implementation. Interviews were conducted typically at the implementing site and in the informant's preferred language—Bengali, Punjabi, Korean, or English. Interviews were audio-recorded and transcribed in English by the same research team members who conducted the interviews. All research procedures were reviewed and approved by the institutional ethics review board of XXX.

Data analysis

Thematic analysis was conducted using a mix of deductive and inductive methods [45–47]. Transcribed interviews were analyzed in two stages. The first focused on implementation outcomes: transcripts were coded for informants' experiences with and perspectives on adoption, adaptation, and sustainability of the program at their site. In the second stage, the coded interview transcripts were reread to inductively identify subthemes reflecting CFIR constructs and subconstructs associated with each implementation outcome. Three research team members coded five interviews each and, with the lead researcher, met to compare themes and resolve any discrepancies in interpretation of informants' responses. The lead researcher reviewed samples from all coded transcripts to check consistency of coding. Transcripts were coded using Atlas.ti software. Study coauthors affiliated with REACH FAR community partners reviewed and approved the analysis, ensuring a check on its credibility.

RESULTS

Intervention characteristics

The defining characteristic of REACH FAR programs was to shift how AA-serving community sites promoted, sold, or served food and enabled discussions about diet, lifestyle, and blood pressure on their premises. Informants viewed these health-focused, community-oriented strategies as concordant with a perceived need for health education and behavior change in the communities they served, illustrating how evidence (subconstruct under intervention characteristics) motivated program adoption.

As a U.S. site informant at a gurdwara put it: "We had been discussing this for a little, that we should improve the eating habits at the gurdwara, because there is too much oily food and that's not good for the people." A KC site informant at a church referred to research findings that, "Filipinos have high incidence of high cholesterol and high blood pressure," which motivated their organization's participation in REACH FAR. An informant from a DREAM site, a mosque, requested additional training material on nutrition because they were "seeing that even at younger ages, people are getting diabetes, or they are having heart problems." A KCS site informant at a grocery store noted that people were not well informed about the food they regularly bought and cooked, and it was difficult to change habits. Through events such as food tasting and sampling stations, they could provide people "some sort of chance to know about healthier eating," enable people to "break that habit at least for a day," and show them that "you can eat healthy and it can taste very good."

When informants reflected on ways to sustain REACH FAR programs, their responses indicated that greater *adaptability* (subconstruct under intervention characteristics) of the program would enhance its uptake. For site leaders, adaptability implied the capacity to adapt program components not only to accommodate organizational constraints but also to leverage organizational resources. For instance, at the KCS grocery store site, the informant said they used "every facet of the store to promote [healthy food options] ... for example, in this store we make tofu inside the store and that's something we promoted." Relatedly, informants expressed that narrow program scope could potentially impede program sustainability. At U.S. gurdwara sites, informants

called for additional program components, such as a physician to be present on specific days to monitor health issues other than hypertension and for a greater focus on women's role in the community.

Another intervention characteristic that informants saw as impeding sustainability was *cost*. Initial funds provided to implementing sites to facilitate program implementation, though modest in scope, were cited as essential to maintain programs. As one KCS site informant discussed, under their church's healthy eating program, they created a new communal menu each week by exploring different healthy options and ingredients. The informant stated that both advice on recipes and program support were important to help the church improve its communal meal offerings.

Program *cost* also featured in informants' views on incentives for program participants or customers, which they saw as enhancing program sustainability. As one KCS site informant at a church noted, they were able to attract the most people for their hypertension management initiative on days when they distributed $5 gift certificates, pedometers, or brown rice: "So if we continue to get those gifts ... then we can bring more people in and bring more people's attention." At a KC restaurant site, the informant said that their ability to offer a free vegetable soup as an alternative to meat soup depended on continued REACH FAR support, which allowed the site to create promotional materials for special menu items.

Outer setting

Informants' responsiveness to their community members' *needs* (outer setting subconstruct) importantly influenced program adaptation and perceptions about program sustainability. The REACH FAR protocol offered each site guidelines and choices of program elements (Table 1). Sites further customized and improvised program elements to accommodate community preferences and to make the program more visible, attractive, and accessible to community members. A DREAM site informant offered this example of blood pressure screening activities at an FBO to suit cultural norms:

> We first set up the program with both the men and the women together. But after more training together, we realized that women were not as interested when the program had both men and women together, so that's why we decided to start the program separately, one day for the women and another day for the men.

During Ramadan, DREAM mosque sites implemented healthy eating programs to accommodate fasting timings by holding health education activities in the late afternoon and during *iftar* (breaking of the fast after sunset). An informant from a U.S. gurdwara site discussed that they set up the blood pressure screening desk late in the morning and kept it open all day knowing that the community "gets up to drink *chai* and eat" after 11 am, following prayer time.

Informants additionally reported adaptations to accommodate members' low awareness about the need for hypertension screening at FBOs. For instance, one mosque, a DREAM site, made scales available so that people could weigh themselves as well as have their blood pressure checked—an informant there noted that people might not feel it was worth visiting the mosque solely for blood pressure screening and that volunteers, not being doctors, could not give medical advice. At another DREAM mosque site, an informant mentioned that volunteers decided to hold weekly screenings instead of the program guideline of monthly screenings to raise awareness of the importance of blood pressure monitoring. At a U.S. site, gurdwara volunteers telephoned some individual community members to remind and encourage them to come to the gurdwara to have their blood pressure taken.

In some cases, FBO site leaders consulted with community subgroups to adapt program elements. At one KCS site, leaders created special menus for the church youth group to incorporate favorite foods in collaboration with Sunday school leaders and the youth group because otherwise it was "hard to meet everyone's needs." In other cases, when REACH FAR program strategies conflicted with community members' food preferences and expectations, FBO site leaders found ways to circumvent or placate community members' expressed dissatisfaction. As a KCS site informant at a church reported:

> We did not announce anything ... we did not say, we are cooking [without salt] ... they knew, especially the elderly people and some of the young groups ... At first I didn't say anything. And after I started hearing complaints I acted as if I didn't hear. At one point, my pastor said, "Can we have at least a salt-shaker?" So I said, you know what, I have an idea. We have packaged salt. If they really want it, they can have it. ... But now they do not ask it. They don't ask for the extra salt. ... I ask them to bring their own salt-shaker.

Similarly, as a U.S. site informant described the communal meals served in a gurdwara:

> The people who cook the food, the chef, even he tells us. He tells us that people complain when we add less salt. ... We tell them to have chutney or to have a little bit of something else instead.

A site leader at another gurdwara, a U.S. site, described that they tried to decrease servings of *pakoras* (a deep-fried snack), but "a lot of people said no!" The site had placed fruit as an option alongside

pakoras; people suggested keeping the fruit and introducing other healthy options but not taking away the *pakoras*, which the site followed.

Informants at retail sites similarly noted how they attempted to overcome entrenched preferences by focusing on selected food habits. At a KC restaurant site, the informant noted that when introducing healthy options, they had offered sugar made from coconut, but they could not promote brown sugar because "Filipinos love ... white sugar." At a KCS grocery store site, the informant discussed how, in an attempt to steer people away from white rice, they had created, together with KCS, a mixture of brown rice, sweet brown rice, black rice, and black beans in a ratio that "allows it to ... almost taste like as good as white rice." The informant said people were unaware of healthy alternatives to basic products used in Asian cooking: "Soy sauce ... soybean paste, red pepper paste. They're all really salty." The store's bilingual staff nutritionist advised people to use low-sodium soy sauce, dilute it with water, or use one instead of two tablespoons.

Informants' views on sustainability showed how the outer setting subconstruct of *cosmopolitanism*—an organization's networks with other organizations—shaped their perceptions about enhancing REACH FAR's effectiveness and realizing long-term community health goals. An informant at a DREAM grocery store site, when asked about sustaining the nutrition program, replied that customers would benefit if the program continued at "not just my store [but] at all stores." At another DREAM site, a mosque, an informant responded to questions about ways to improve and sustain the program by suggesting that the REACH FAR team endeavor to "implement the program in not just [this mosque] but other mosques in the community," particularly those that drew large membership. In making these suggestions, informants suggested that REACH FAR's sustainability depended not only on its particular program elements but also on the reach of its message across diverse organizations and social networks that connect ethnic and religious groups.

Inner setting

Informants' reasons for adopting REACH FAR evinced two themes that underscore the alignment between the implementing sites' inner setting and the intervention's goals. One theme concerned organizational culture (inner setting subconstruct). REACH FAR programs reinforced the sites' commitments to health and motivation to adopt the program. A KC church site informant remarked:

> Regularly, our church, we have been doing that already. We've been encouraging our people for to eat low fat diet, low salt diet, high fiber diet, and plant based. Ever since we've started as a church 16 years ago, 17 years ago, you know change is a process; people don't change overnight, so promotion of the health is constant, should be constant.

The informant at a KCS grocery store traced their 30 year history as a family-run business and long-time commitment to promoting health and nutrition among the Asian community, "where the owners can directly get involved in events such as this," as factors that enabled them to better plan and promote the REACH FAR program.

A second theme, highlighting sites' *readiness for implementation* (inner setting subconstruct), was informants' motivation to build upon the organization's connection to and standing in the community. An informant at a gurdwara, a U.S. site, said they could reach poorer, uninsured community members, those who could not otherwise readily access health care services and who may not have "gone to a doctor in a very long time, in a year or two." As a DREAM site informant similarly noted in reflecting on the mosque's health-related programs: "we have a responsibility to the community to make sure everyone is getting the best treatment." At a KC site church, an informant's remarks underscored the alignment between this sense of public responsibility and the church's mission and reach. The informant discussed how the pastor could "use the pulpit" to communicate health messages and stressed the connection between religiosity, community, and health:

> As I've said, since this is a church, we believe our body is a temple of the Holy Spirit, so whatever you do to your body, is your gift to God, this the body is a gift from God ... So it's something that the relationship of having healthy body, healthy heart - you can do more for the church, you can do more for the community as well.

This commitment to health enabled site leaders to overcome challenges where community preferences conflicted with program objectives, such as when congregants complained about low-salt communal meals or resisted giving up high-fat treats. In these situations, site leaders mostly persisted with healthy options, as the examples above in the section on outer setting show.

In other ways, inner setting aspects, specifically insufficient *resources*, required site leaders to adapt the program to suit organizational constraints. By design, REACH FAR programs are developed by and for communities—they rely on trained volunteers and staff to promote and manage them on site. For the sites, difficulties with recruiting volunteers and staff turnover could impede consistently meeting program goals. A DREAM site informant noted that when the two volunteers for the hypertension management program at the mosque were unavailable,

it was difficult to hold the program at all. Lack of volunteers was cited by one KCS church site as a reason they had considered discontinuing their hypertension management program: "It was hard to find volunteers to help us." Site leaders and managers found ways around this problem. For instance, an informant at a KCS site described the challenge of dealing with a changing cast of volunteers coming in to the church kitchen and the tight timeline to prepare and serve meals on Sundays:

> Every week I have different people coming in. They do not know me and I do not know them because they are new and I'm busy. .... I learned that I need to divide my work into the groups. Now I ask them "Can you go to the market and get things for me?" So in other ways, I'm trying to train them in case I'm not here.

Another KCS church site informant discussed the challenges they initially faced in handling the numbers of people who arrived for the hypertension program: while they managed to take and record everyone's blood pressure, they did not have time to counsel people. One KC church site began to hold blood pressure monitoring twice a month instead of monthly because they found they could "not do it all in one sitting." At another KC church site, the organization's monthly board meetings conflicted with REACH FAR program activities, prompting the informant, who had to divide time between events, to stress that they "need[ed] more people to handle this." A KC restaurant site reported that due to staff turnover, they had to repeat trainings a few times a year. Informants thus cited concerns about adequate, trained staff and volunteers as constraints on potential sustainability of the programs.

Characteristics of individuals

Implementation sites' inner setting overlapped with the characteristics of individuals within it—both leaders and volunteers—to shape program adoption, particularly at faith-based sites where *individual identification with the organization* was especially strong. An informant at a KC site highlighted the role of church leaders in galvanizing congregants to lead the REACH FAR programs:

> Because what the pastor is doing, it opens a lot, it opens the eyes of the people. So whenever pastor is there, they see pastor as an authority ... if he says that oh next time if you're going to prepare [communal meals], is it possible for you to use some alternative ingredients ...

Individual identification also shaped volunteers' willingness to contribute to the program and thus influenced its adoption. The same KC site informant noted that the volunteers "really wanted to help, because for them it is part of the ministry of the church, so they did this." For a summary of CFIR constructs and subconstructs associated with implementation outcomes, please see Table 4.

DISCUSSION

REACH FAR sites differ in their organizational goals, resources, and communities. Yet the ways in which they leveraged their advantages and addressed their challenges illuminate at least three generalizable lessons about factors that influence implementation of health programs in AA-serving community sites.

Congruence between intervention characteristics and inner setting drives sites to adopt and persist in operating community health programs

REACH FAR programs resonated in sites where leaders perceived a need to address health needs in their communities (*evidence* supporting intervention characteristics) and where organizations had historically engaged in health programs (inner setting *culture*). Leaders' authority in and volunteers' identification with the organization (individuals' characteristics) further reinforced program adoption, such as a pastor's encouraging volunteers to prepare healthy communal meals.

These findings align with findings on community health programs involving FBOs. A study of Latino-serving Catholic churches in Massachusetts similarly found that their religious mission of supporting physical and mental health, especially among the underserved; efforts to cultivate volunteerism and community service among members; and church leaders' influence over congregants' beliefs and behaviors made the churches strong partners in health promotion programs [34]. An oral health initiative for Sikh Americans in New York City built upon gurdwara leaders' and community health workers' roles as trusted champions and educators who could advocate for behavior change in settings where people felt comfortable and open to receiving information [40]. A UK-based program that used religious venues—South Asian-serving temples and mosques—for hypertension screening similarly relied on community leaders' ability to inspire trust and encourage people's participation in the program [48]. Our findings highlight a further point not studied in other programs, namely that FBOs can be venues for not only screening disease conditions but also actively enabling healthy behavior on-site. By adjusting communal meals toward healthier options, FBOs could fulfill a health promotion goal within the scope of their community-oriented activities.

Corner stores in low-income neighborhoods in U.S. cities provide an instructive comparative perspective on the role of local businesses in health promotion. Studies show that, as in REACH FAR sites, corner store owners and managers are typically aware of community health issues. In Baltimore, store owners recognized obesity as an issue in the

community and the importance of consumers having access to fresh foods [49]. In Philadelphia, owners perceived themselves and their stores as community resources and were oriented to positively influence customer health behaviors [50]. The challenges that store owners recounted in offering customers healthier food options echoed challenges at REACH FAR retail sites. For instance, New York City's Healthy Bodegas Initiative, which incentivized corner store owners to implement over a dozen health-promoting criteria, found that improving the stores' inventory of healthy foods was feasible, but changing customer purchases requires intensive guidance for store owners and collaborations with community organizations to increase consumer demand for healthier options [51].

Site leaders at REACH FAR retail settings cited similar hurdles: people's lack of knowledge about healthful eating (e.g., ways to prepare low-sodium food); entrenched cultural food preferences (e.g., reluctance to give up white sugar), and, for the site, the cost of offering healthy options (e.g., vegetable soup as a free alternative to meat soup). However, unlike neighborhood corner stores, REACH FAR retail settings were able to draw on their deep community knowledge and ties to overcome these difficulties, such as by distinguishing between foods they could introduce and promote (e.g., sugar from coconut) and foods they could not entirely eliminate (e.g., white sugar). In both FBO and retail settings, the sites' inner setting, characterized by a community-orientated interest in promoting healthy eating, was aligned with the intervention's core strategy, which was to enable sites to *flexibly* offer healthy alternatives to the food they regularly sold or served. Concordance between the site's community knowledge and the intervention's flexibility enabled sites to adopt and persist in delivering the program.

Program adaptations can be responsive to community preferences without compromising commitment to health goals

The factors noted above—knowledge of the community and flexibility of options—also enabled program adaptation. Site leaders adapted programs in response to the religious and cultural preferences of the communities they served (outer setting *needs*), such as Muslim FBOs' providing separate hypertension screening for men and women. Additionally, our findings show that when community preferences conflicted with core program objectives, such as when congregants complained about low-salt communal meals, site leaders mostly persisted with healthy options (inner setting *leadership engagement*). Their commitment to core program objectives drove which adaptations they made and which they opted *not* to make.

Previous research suggests that cultural adaptations are less often effective in diet and physical activity interventions, which involve deeply rooted cultural values and personal identities, than they are in other behavioral programs such as smoking cessation [35]. Changing dietary habits, thus, requires attention not only to raising health literacy about the right foods but also to the cultural, religious, and social norms that undergird which, when, and how food is eaten. Under REACH FAR program design, sites had the flexibility to offer their congregants and customers culturally appropriate healthy food options, but the implementation of this design depended on-site leaders' capacity to *negotiate* community preferences rather than solely promote healthy foods. Studies that survey the interest and capacity of FBOs to undertake such programs suggest that the community-oriented mission and social engagement of leaders and volunteers are key factors in shaping program adaptations to ensure effectiveness [52]. Findings from REACH FAR implementation underscore the importance of site leaders' achieving a balance between responding to community preferences while staying committed to health objectives.

Sustainability, as perceived by site leaders, requires organizational resource support and involvement of other community sites

Sustainability, in site leaders' perspectives, relied on fortifying inner setting *resources* and extending the program to other sites in the outer setting (*cosmopolitanism*). Site leaders noted that staff turnover, insufficient volunteers, and discontinuation in funding support from the REACH FAR project could impede program sustainability, while other organizational assets, such as space, could be strategically better utilized to enhance sustainability. This point reinforces research showing that while community sites provide an ideal setting for health promotion, program success depends in part on integrating activities into the sites' ongoing operations and resources [34,52].

The findings additionally suggest how the potential for sustaining community-based nutrition programs may differ across types of community sites. While informants from restaurants said that REACH FAR's financial support helped them introduce healthy options in their menus and make healthy items available for free, site leaders at grocery stores already stocked fresh foods and some higher-cost healthy food options. From our formative work, we learned that ethnic grocery stores serving AA markets are responsive to customer demand for traditional ethnic foods, including ethnic fruits and vegetables usually not stocked by mainstream grocery stores [32]. For this reason, REACH FAR encouraged them to expand and actively promote these options. Unlike many small stores (e.g., corner stores, convenience stores, and bodegas), the ethnic grocery stores in our study had prior experience in selling fresh produce and a diverse inventory of foods. Whereas small stores typically face challenges in sourcing, purchasing,

and stocking perishable foods and healthier options at low cost [53], studies suggest that immigrant-run ethnic food retail stores may benefit from ethnic business networks and an understanding of niche market opportunities that enable them to overcome the challenges of providing healthy foods in low-resource urban environments [54].

Site leaders' suggestions to extend the program to other similar FBOs and ethnic businesses as a way to sustain it further highlights the importance of interorganizational networks in program implementation. Site leaders did not view the outer setting as a demarcated external environment. Rather, they perceived their organizations as socially embedded and their communities as connected through various dimensions of social and cultural life that together impacted collective and individual behavior. In this view, achieving improved community health would be accomplished not solely through discrete interventions but through reinforcing efforts across multiple sites with whom community members had contact, such as public schools, other restaurants, and other mosques. This contiguity between inner and outer setting is especially salient for behavioral programs involving diet and physical activity, since social and organizational networks can structure how cultural values and norms are shared, reinforced, and potentially disrupted and have been shown to affect health behavior and outcomes [55,56]. Implementation strategies of culturally adapted health programs targeted to racial/ethnic groups should incorporate knowledge of interorganizational ties and build community leadership capacity [56].

Limitations of the study

As noted above, we were unable to analyze the CFIR construct of process since we did not observe the deliberative processes through which site leaders and managers made decisions to adopt and adapt programs. Moreover, since we used interviews to assess selected implementation outcomes, we cannot report on fidelity, which would require direct observation. Finally, we interviewed site leaders who could provide perspectives on adoption, adaptation, and sustainability, but interviews with volunteers and staff would offer more granular views on the implementation process. We did not conduct interviews at sites that dropped out of the program and recognize that future work can be enhanced by understanding implementation failures.

CONCLUSIONS

Translating evidence-based behavioral health programs to reach racial/ethnic minorities requires not only culturally tailoring the health behavior components of programs but also anticipating the organizational and social contexts in which programs are implemented. To generate knowledge of how context influences implementation, we studied the case of the REACH FAR project. REACH FAR increases access to culturally adapted nutrition education and hypertension screening and counseling strategies through AA-serving community sites. Our findings underscore the importance of intervention design and implementation strategies that concord with the implementing organization's mission, commitments, and resources; reinforce site leaders' engagement; and build upon ties between organizations and communities as well as among community-serving organizations. Program adoption and adaptation, crucial to engender intervention uptake and effectiveness, can be facilitated by the flexibility of program options that site leaders have at hand and by their knowledge of community preferences, which together enable leaders to respond to community needs even as they persist with programmatic goals.

Acknowledgements: We are grateful to the DREAM coalition, Kalusugan Coalition, Korean Community Services of Metropolitan New York Inc., and UNITED SIKHS, who played a central role in selecting implementation sites and identifying and facilitating access to key informants. We are grateful to the key informants who participated in interviews for this study. We thank all the REACH FAR implementation sites: faith-based organizations include Baitul Mamur Masjid and Community Center, Bangladesh Muslim Center, Bayanihan Seventh Day Adventist Church, Elmhurst Baptist Church, Flushing United Methodist Church in Flushing, Gurdwara Dashmesh Darbar, Gurdwara Singh Sabha, Hyo Shin Bible Presbyterian Church, India Home at Jamaica Muslim Center, Karamjot Sikh Center, Somahng Presbyterian Church, and Yeshua Worldwide Ministries, and restaurants and grocery stores include Apna Sohna Punjab, As-Salaam Grocery, Fatema Grocery, H & Y Marketplace, Han Nam Mart, H MART, Kabayan, Payag Restaurant, Royal India Palace, Tandoori Hut, and Tito Rad's Restaurant.

Compliance with Ethical Standards

Funding: This study is supported by grant number U58DP005621-01 from the Centers for Disease Control and Prevention (CDC). Author's contributions are additionally supported in part by grant number U48DP005008 from the CDC and grants P60MD000538, U54MD000538-15, R01DK110048-01A1, and UL1TR001445 from the National Institutes of Health (NIH). The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the NIH and CDC.

Conflicts of Interest: All authors declare that they have no conflicts of interest.

Authors' Contributions: RG, SP, SCK, and NI conceived the paper's aims. NI and SCK drafted the original protocols on which the manuscript is based. RG drafted and edited the manuscript. SP, SCK, and NI reviewed later drafts and provided critical feedback. SM, RD, and AN conducted the interviews, and with RG analyzed the qualitative data. All authors read and approved the final manuscript. CC, MDT, MJG, HS, and SK implemented the project and reviewed and edited the manuscript.

Ethical Approval: This research was approved by the New York University School of Medicine. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee of the New York University School of Medicine and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

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