Understanding Barriers to and Facilitators of Diabetes Control and Prevention in the New York City Bangladeshi Community: A Mixed-Methods Approach

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We have reported results from the formative stage of a community health worker intervention designed to improve diabetes management among Bangladeshi patients in New York City. Trained community health workers conducted focus groups (n=47) and surveys (n=169) with Bangladeshi individuals recruited from community locations. Results indicated that participants faced numerous barriers to care, had high rates of limited English proficiency, and had low levels of knowledge about diabetes. Most participants expressed interest in participating in a community health worker intervention. (*Am J Public Health.* 2012;102:486–490. doi:10.2105/AJPH.2011.300381)

The Bangladeshi population is the fastest growing Asian American subgroup in the United States.[1] Despite high diabetes rates among Bangladeshi individuals in their home country, England, and Canada,[2–4] the literature on diabetes prevalence, prevention, and management for US Bangladeshi individuals is scant. We report results from the formative stage of a community health worker intervention designed to improve diabetes management among Bangladeshi patients in New York City, home to the largest Bangladeshi population in the United States.

METHODS

Community health workers trained in focus group moderation and survey administration conducted 6 focus groups with 47 Bangladeshi women and men living in New York City to gain an in-depth understanding of health beliefs, behaviors, and barriers to and facilitators of diabetes management. Individuals with diabetes or their family caregivers were recruited through the ethnic media and street outreach in areas with a large Bangladeshi population. Additionally, Bangladeshi individuals representing a cross section of the population were purposively recruited through community events and completed a 72-item survey to determine diabetes prevalence; health care access barriers, behaviors, and practices; and diabetes knowledge (n=169). The survey was administered in person in Bengali by community health workers, and all measures were self-reported by respondents. Survey measures with strong reliability and validity in minority and South Asian populations were adapted from various sources.[5-10]

Focus groups were gender segregated (3 male, 3 female), conducted in Bengali, and audiotaped. Audiotapes were transcribed into Bengali and translated into English by a trained translator and reviewed independently by 2 study team members for accuracy. Focus group participants also completed the survey questionnaire.

We used ATLAS.ti (ATLAS.ti Scientific Software Development GmbH, Chicago, IL) in an iterative process to conduct focus group analysis.[11] We analyzed survey data with SPSS, Version 17 (SPSS Inc, Chicago). Because we used convenience sampling strategies, survey data were not weighted. Because most survey respondents were individuals with diabetes, survey findings from focus group participants and community sample participants were compared to determine significant differences between the groups.

RESULTS

Descriptive findings (Table A, available as a supplement to the online version of this article at http://www.ajph.org) indicate that focus group and community respondents reported high rates of limited English proficiency (speaking English less than fluently or very well) (92% vs 63%; $P<.05$). More focus group participants had been in the United States 10 years or longer (64% vs 53%), and more community respondents had an annual income of less than $25 000 (36% vs 30%) and had completed some college or more (72% vs 47%; $P<.05$). More focus group participants expressed fair or poor health (67% vs 32%; $P<.05$) and reported various barriers to care. Among community respondents, 26% reported having diabetes. Eighty-seven percent of the diabetic focus group participants and 95% of the diabetic community respondents did not know the meaning of hemoglobin (Hb) A_{1c} (an important indicator of diabetes control). Twenty-three percent of the focus group participants and 12% of the community respondents reported uncontrolled HbA_{1c} levels, but the majority in both groups were not able to report their HbA_{1c} (57% and 53%, respectively). Most diabetic respondents in both groups reported using medications to manage their diabetes. One quarter of focus group participants and one third of community respondents reported eating outside of the home at least once per day, approximately one third of participants in each group reported never reading calorie labels to choose more nutritious foods, and most of both groups did not report consuming the recommended servings of fruits and vegetables per day. More community respondents reported getting no structured physical activity (75% vs 58%; $P<.05$). Both groups reported high willingness to participate in community health worker programs.

Table 1 shows qualitative findings regarding facilitators of and barriers to diabetes prevention and control, further illuminating quantitative survey findings on health behaviors and diabetes management practices (for more detailed results, see Table B, available as a supplement to the online version of this article at http://www.ajph.org).

Psychosocial and Behavioral Factors

Facilitators of diabetes prevention and control included low stigma attached to diabetes and high levels of knowledge about

TABLE 1—Focus Group Results

Factors Related to Diabetes Control and Prevention	Barriers	Facilitators	Implications for CHW Intervention
Psycho social/behavioral factors (e.g., health behaviors, knowledge, social support)	**Family Chastisement** Yes I understand what she's saying. You were talking about eating habits and your family. For example, my children are grown up. My daughter is married. She's always calling me and explaining to me what to do and eat. And if she hears that I made something sweet, she will call and scold me on the phone. She warns me that the other people in the house will get diabetes if they eat it too. My older son says the same. He gets angry and throws away anything sweet I make. When I eat dinner or lunch, and there is something fatty on the table, they will move it away from me. (female participant)	**Individual Change leading to family change** Me, my brother and his family, my father-in-law and their family, everyone became changed after seeing my mother suffering with diabetes. We started to control food; chicken, beef, goat and the doctor told us how to prepare the food so that it wasn't as fatty. A few days ago, I took my mother to the doctor's office in Flushing, Queens. And, he gave us a long chart of how to prepare food. . . . If they properly eat and routinely follow everything and do exercise properly, they will be okay. (male participant) **Desire for social support** Family support is important. Like if your family understands your emotions, like we said before about the food we like to eat but cant and consider it. They can bring less of those foods we cannot eat or eat them outside of our homes, at least then it makes our routine easier to maintain. Like if we make combined choices with our family in what we cook at home, it makes it easier for all of us. But if there are 4 people at home with 4 different choices, then we have to cook 5 different types of food, which wastes a lot of time and energy. (female participant)	Family and social support was cited as crucial elements to promoting health. CHWs can employ strategies to promote social support through group and family activities. In addition, strategies to overcome family conflict and promote positive family communication may be an important element of the intervention.

Continued

TABLE 1—Continued

Cultural and religious factors (e.g., cultural concepts, tradition, and practices)	**Overconsumption of rich traditional foods** In New York, all people cook rich foods for parties. We are eating and getting sick. (female participant) No, here is the difference. In Bangladesh we cannot cook that fast. We cannot buy the things right away. We have to go to market and we don't have the materials every time at home. At first we have to buy then we have to cook. Here everything is handy. Whenever we want to eat, we cook right away and eat it. When any guests come, right away, we start cooking rich food. (female participant) **Concept of niyom** Diabetes put me in a [niom] regular routine. That means the eating habits, moving around and walking, exercise, taking care of myself. It means, put you in a wide range of regularities. If I have diabetes, if I live with those regularities, and I really believe and I do have lots of evidence that those who do have diabetes follow the routines with the diabetes the person can live in good health. The life expectancy will be higher than normal people. If you don't follow the niom [routines], naturally, the life expectancy goes down, he may lose his eyes, kidneys, and not only that, because I know from the beginning the dark, that is my future. Now, I have to decide that I have to go to the dark or to the light. . . which will I choose? If I follow the [niom niti] routines, I can go further up. This is not only my thought, actually this is my belief. **Religion and Physical Activity** Yes, I pray 5 times a day. Prayers are like exercise. You go up and down regularly. (female participant) Yes, I'm out to walk every day morning. I walk at least half an hour. Even that, the Mosque is too far from my home. I do it every day 4/5 times. (male participant) **Strong media networks** Not everyone can come to a meeting like this. How are they going to see? You can show it on TV (broadcast). Like I have been seeing on the bangla channel about young children with diabetes and how their mothers have to cook special food for them. You can make programs like that and we can watch from home. (female participant)	CHWs can leverage their status as community leaders to promote traditional values and practices that are used to maintain diabetes control in the community. Additionally, the intervention curriculum can promote aspects of Bengali culture that promote health (e.g., integrating traditional recipes of fish or vegetable dishes). Given the importance of social gathering where traditional foods are served, CHWs can host community events or gathering where lighter version of "rich" traditional foods are featured.
Structural, environmental, and community-level factors (e.g., barriers to health care)	**Time and occupational barriers** In Bangladesh, you cannot get everything right the way whatever you need for cooking like polau-biriani. You have to go to market. Here, you can get it right away. Whenever guests are coming, we cook polau right away. Cooking chicken. Serve the guest. You also bring juice. You don't have that in Bangladesh. Big difference here. (female participant) Right now, I don't understand anything about being healthy or keeping good health. A lot of times I am preoccupied. I am working to eat. After work I am really tired. A lot of times I eat outside.	As part of the intervention, CHWs can assist participant in locating markets and food stores where traditional and healthy foods are available. In addition, neighborhood level organizing in conjunction with ongoing city efforts can be undertaken to advocate for affordable healthful foods. Intervention programs can be tailored to address occupational barriers by engaging in work-site based health promotion. CHWs associated with the program have extensive experience in labor organizing that can be leveraged to develop specific health strategies relevant to low-wage workers

Note. CHW = community health worker. For more results, see Table B (available as a supplement to the online version at http://www.ajph.org).

diabetes causes and consequences. Participants also expressed high compliance levels with health care regimens, including medication adherence and visiting health care professionals. Both caregivers and patients with diabetes themselves emphasized that having a person with diabetes in the household often spurred positive family-level changes in household diet.

Regarding barriers, some participants (particularly women with diabetes) expressed that family members could be overzealous about enforcing dietary restrictions, leading to conflict. Many participants expressed a lack of motivation to engage in healthful behaviors such as physical activity or healthful eating. Finally, among patients with diabetes, few participants could articulate the meaning of HbA$_{1c}$.

Cultural Barriers and Facilitators

A unique cultural facilitator of diabetes prevention cited among Bangladeshi people is the concept of *niyom* (translated as following a routine or living life by the rules). The concept of *niyom* indicates that community members have a cultural commitment to engaging in positive healthy behaviors if properly educated about their value. Other facilitators included issues related to food, complementary and alternative medicine, and religious activity. For example, participants noted that traditional Bengali foods promote health and are thought to have curative properties. Religious activity (e.g., prostrating during prayers 5 times a day as part of the Muslim tradition) was noted as a form of physical activity. One cultural barrier is the preparation and overconsumption of high-fat, traditionally "party foods" (such as *biryani,* a rice dish prepared with goat meat) served at social gatherings.

Structural, Environmental, and Community-Level Barriers and Facilitators

Examples of facilitators included community "walking groups" that provide social support and physical activity. Many participants commented on the role of Bangladeshi media as an important source of information.

Participants reported barriers to accessing health care providers, including language and communication, and navigating the health care system. Participants explained that

unhealthy foods, including items from Bengali restaurants and high-fat red meats (such as beef), were too readily available in the United States and that they generally lacked time to cook healthy foods. Finally, participants expressed occupational barriers (e.g., low-wage, sedentary jobs) to diabetes control and management.

DISCUSSION

This study represents the first attempt to document diabetes prevalence and related prevention and management strategies among the New York City Bangladeshi population. Although study findings are not generalizable to the overall Bangladeshi population, qualitative and quantitative findings fill an important gap in the health disparities literature. Findings indicate that despite the Bangladeshi community's limited English proficiency and knowledge about diabetes management, facilitators can be leveraged to successfully reduce diabetes disparities in this community.

Literature suggests that community health workers play diverse roles in improving community health.[12,13] Our findings indicate that community health workers can play important roles in motivating participants to engage in positive behaviors, providing culturally relevant health information, facilitating social support, and helping to navigate the health care system for this population. Formative research that investigates multiple factors affecting health can foster development of culturally appropriate and effective community health worker interventions to improve diabetes management among Asian Americans.

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Estimates of Smoking-Related Property Costs in California Multiunit Housing

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We systematically evaluated smoking-related costs in multiunit housing. From 2008 to 2009, we surveyed California multiunit housing owners or managers on their past-year smoking-related costs and smoke-free policies. A total of 27.1% of respondents had incurred smoking-related costs (mean $4935), and 33.5% reported complete smoke-free policies, which lowered the likelihood of incurring smoking-related costs. Implementing statewide complete smoke-free policies may save multiunit housing property owners $18 094 254 annually. (*Am J Public Health.* 2012;102:490–493. doi:10.2105/AJPH.2011.300170)

Approximately 10.6 million Californians live in multiunit housing (MUH),[1] where units with smoke-free policies can be affected by environmental tobacco smoke morbidity and mortality effects through shared air spaces and ventilation or drifting from outside.[2,3] Lack of information on MUH smoking-related costs (e.g., cleaning, replacement) may contribute to MUH owners' and managers' reluctance to implement smoke-free policies.[4,5] We surveyed California MUH owners and managers to determine (1) the smoking-related costs borne by MUH owners, (2) the smoking-related costs prevented in MUH as the result of smoke-free policies, and (3) the economic benefits of all MUH implementing complete smoke-free policies.

METHODS

Between July 2008 and February 2009, we conducted a computer-assisted telephone interview survey among 343 California Apartment Association (CAA) members who owned or managed MUH, with an overall response rate of 22.4% and an overall co-operation rate of 40.5%.[6] CAA members were randomly selected and were sent presurvey notification letters proportionate to sizes of the 20 regional CAA chapters and to the small and large properties within each chapter (we defined "large" as ≥16 units, which requires an on-site property manager).

We used survey items and categories adapted from the Property Owners and Managers Survey[7] to ask respondents to estimate smoking-related costs beyond standard operations that were incurred during the preceding 12 months for the entire property with the most recently vacated unit. Categories included cleaning, repairs and maintenance, painting and decorating, trash collection, fire damage, property insurance, fire insurance, other insurance, legal costs, administrative costs, and other operating costs. We asked respondents whether the property had a complete smoke-free policy, which was defined as no smoking permitted anywhere on the property, including both in private units and in public (common) places. We then asked those who responded "no" whether any buildings, public places, or units on the property were smoke-free. If yes, we

designated the property as having a partial smoke-free policy. If all responses were negative, we designated the property as having no smoke-free policy. Other domains of the survey included property, building, and unit characteristics and personal characteristics and beliefs of the respondent. Poststratification weights for the final sample reflected the overall statewide CAA member sampling frame.

We used Stata version 10.0 (StataCorp LP, College Station, TX) to perform all statistical analyses, using 2-tailed significance levels. We analyzed a zero-inflated negative binomial model[8,9] of property smoking-related costs predicted by

1. smoke-free policy status,
2. the number of units,
3. an on-site owner or manager,
4. rent regulation,
5. shared ventilation,
6. shared furnaces, and
7. respondent smoking status.

We used recycled predictions[10] to estimate the base case and smoke-free scenarios for all California MUH by multiplying the predicted prevalence and amount of smoking-related costs with the total units in structures with ≥2 units in California from the American Community Survey from 2005 to 2007.[1]

RESULTS

One third of properties had a complete smoke-free policy, but nearly half had no smoke-free policy. Small properties had more than a threefold higher rate of having a complete smoke-free policy compared with large properties (Table 1). More than one quarter of properties (27.1%) experienced smoking-related costs; large properties had nearly a threefold higher rate of smoking-related costs compared with small properties.

Among all properties experiencing smoking-related costs (Table 2), the mean cost was $4935. Even after accounting for withheld deposits, the mean cost was $4252. The mean per unit cost was $282, with small properties having higher per unit costs than large