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Solving the obesity epidemic: voices from the community

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Abstract

Science and Community: Ending Obesity Improving Health (S&C) aimed to reduce obesity in Houston by developing community partnerships to identify research priorities and develop a sustainable obesity reduction program. Partnership members were recruited from S&C events and invited to participate in in-depth interviews to gain insight into obesity prevalence, causes, and solutions. Members ($n = 22$) completed a 60–90-min in-depth interview. The interview guide consisted of 30 questions about pressing health problems in the community, potential solutions to health problems and obesity and how the environment has impacted obesity and health behaviors in the community. Interviewees ($n = 12$ women and 10 men) were mostly Hispanic/Latino ($n = 9$) and African American ($n = 7$). Common problems identified were childhood obesity, balancing a healthy diet and physical inactivity. Interviewees identified obesity as a major problem in their communities and cited access to quality food and physical activity resources as both a problem and a solution. Additional emergent themes focused on solutions, including increasing awareness and education, coordinated efforts among organizations and using an ecologic approach to combat obesity. Community insight gleaned from this study may be used to enhance relevance and sustainability of programs developed to reduce obesity and suggests possible avenues for participatory research and intervention.

Keywords

African American; community health; health promotion; Hispanic; interviews; obesity; public health; qualitative research

Despite state and national campaigns and strategies, the obesity challenge in the United States is increasing in size and scope (Ford et al. 2011). This is particularly evident among African Americans and Hispanics or Latinos residing in Houston, Texas, home to approximately 4 000 000 people, of which 19.3% identify as black and 38.1% identify as Hispanic or Latino (U.S. Census Bureau 2013). Current obesity prevention and control

strategies based on effective theoretically guided and laboratory-based interventions often target individual-level health behaviors and have marginal short-term effects with limited ecological validity (Huberty et al. 2008). The limited impact of these strategies suggests a need to work collaboratively with the community to create innovative solutions to reduce obesity from a 'real world' perspective. This perspective allows for the engagement of community members in the development of evidence-based sustainable interventions and/or guides the translation of evidence-based interventions into communities to ensure greater implementation and sustainability (Suminski et al. 2009).

Science and Community: Ending Obesity Improving Health (Science and Community) aimed to develop an academic–community partnership to reduce obesity by developing a shared vision and agenda via community outreach and education. The guiding framework for the study was the Ecologic Model of Physical Activity (Spence and Lee 2003), which takes into account intrapersonal factors, dynamic interpersonal relationships, the physical environment and policies and how they influence physical activity (Spence and Lee 2003). Intrapersonal factors related to physical activity may include an individual's weight, attitudes, self-efficacy or health knowledge related to physical activity. Interpersonal, or social, factors may include dynamic social and physical linkages between people and places that promote physical activity, such as support from family and friends to do physical activity regularly. The physical environment includes the availability of, accessibility to and quality of physical activity resources and the pedestrian environment. Policies that may impact physical activity include city zoning laws, which may guide or determine where recreation facilities are built, and other policies related to the neighborhood environment, including but not limited to the speed limit, number of travel lanes and designated bicycle lanes.

Ecologic models in conjunction with CBPR approaches can greatly enhance efficacy and sustainability of programs and promote long-term health behaviors. The purpose of this study was to explore and describe community perceptions of the causes of obesity and possible solutions. Use of the ecologic model fostered the examination of ecologic factors that contribute to the obesity epidemic. This study informed a collaborative research agenda developed as part of the *Science and Community* project and may also help to inform other health promotion research that focuses on sustainable community approaches to obesity.

METHODS

Participants

Science and Community Opportunity Receptions were held to introduce the project to the community and to recruit community members to the partnership. Details on the *Science and Community* project and recruitment events held in Houston, Texas, including Opportunity Receptions, are available from the authors upon request. Those who expressed interest in completing an in-depth interview postreception were contacted by a research team member to schedule an interview appointment. All *Science and Community* study materials, assessments, measures and procedures were approved by the Committee for the Protection of Human Subjects at the University of Houston, and participants provided written informed consent to participate.

A total of 22 community members, including 10 men and 12 women, agreed to participate and completed a 60–90-min interview. Participants were middle-aged, mostly Hispanic or Latino (40.9%) or African American (31.8%), and represented a wide variety of occupations and fields, including but not limited to healthcare practitioners and technicians (18.5%), financial and business (18.5%), and community and social services (14.8%).

Interviews

In-depth interviews provide access to community members' observations, thoughts and opinions and insight into the nature of social life (Weiss 1994) and were conducted to assess participants' perceptions of the challenge of obesity in their communities and potential solutions. Semi-structured, versus unstructured, interviews were chosen to allow for comparisons across people using a similar set of questions and probes (Bernard and Ryan 2010). The principal investigator and project director prepared an interview guide with 30 questions. Questions included 'What do you think is the most important health problem or concern in your community', 'Tell me what you think we should do to solve this problem', 'What do you think your community would need to solve these health problems', 'If you were to create an obesity prevention or treatment program, what would you do' and 'How do you think partnerships with community organizations, such as churches and community centers, could help to stop obesity'.

Interviews were conducted by seven trained research team members, including three men and four women. Interviewers completed a 2-day training led by the project director and principal investigator on qualitative data collection methods. Each interviewer practiced at least eight interviews with other research team members and two interviews with undergraduate student volunteers outside of the research team (not research participants), for a total of ten practice interviews, lasting 60–90 min each. The principal investigator or project director observed practice interviews and provided feedback to enhance interviewing skills throughout practice interview sessions.

Procedure

In-depth interviews occurred between October 2010 and March 2011. Participants who attended community events and expressed interest during the event were contacted immediately after the event to schedule an appointment to complete the interview. Others who attended the event but did not express interest immediately were invited to contact the research team for more information and to schedule an appointment to visit the Texas Obesity Research Center at the University of Houston to complete the interview. Interviewers and participants were matched on gender at all times and on ethnicity when schedules of participants and interviewers permitted to increase acceptance of the interviewer by the participant and to increase the likelihood that the interviewer would understand the participant (Weiss 1994). Each research team member completed between seven and sixteen interviews as the interviewer or non-interviewing observer. Prior to beginning the interview, participants completed a brief survey including demographic information, such as age and gender. All interviews were audio recorded, and a non-interviewing observer took written notes throughout interviews. Participants were compensated with a \$30 gift card upon completion of the interview.

Data analysis

Interview recordings were transcribed by a professional medical and research coding company. Transcribed data were managed using ATLAS.ti version 6.2 software and analyzed using a constant comparison approach (Bernard and Ryan 2010). This approach allows for the development of explanations through patterns but also allows the coder to utilize theory and prior knowledge or research to answer a research question (Bernard and Ryan 2010). In the current study, the ecological model was used to guide the analysis. Two trained, non-interviewing members of the research team coded interviews to improve reliability of data (Denzin 1978). As each transcript was read, repeated ideas, important quotes and notable missing information were identified and organized into groups of related concepts. Related codes from all interviews were grouped together, and a list of themes emerged, or was induced from the data, by searching for patterns across transcripts. During a second reading of interview transcripts, each interview was compared and contrasted to the current codebook, and themes were confirmed, modified, or rejected. A final read found all categories saturated and identified no additional themes. The final list of themes was then organized by interviewers and coders into categories using an inductive approach by searching for patterns among themes that most appropriately represented participants' ideas and the findings. The final four categories for discussion were (i) awareness and education, (ii) access – a problem and solution (iii) coordinated efforts and (iv) a comprehensive approach to obesity.

RESULTS

Access – a problem and solution

Obesity and its consequences were identified by participants as the most important health problem in the community, and at the root of the problem (and the seed of the solution) was access, defined as distance, cost and availability. One Hispanic woman identified lack of access to healthy food options, physical activity resources and adequate health care as key problems in the community and stated, 'Not having a grocery store that has fresh fruits or vegetables is also a problem in a lot of neighborhoods where they only have convenience stores'. Another African American woman said, '... If you are limited in what you can access, then of course your choices are made for you. However, if you do have access – if you're not limited ... you can get access to healthier foods and things of that nature'. All participants made the connection between the neighborhood environment and accessibility or availability and described access as referring to both distance and cost.

Access meaning the food being affordable. That's one of the challenges that I hear often is that it costs a lot of money to be healthy. It costs a lot of money to eat healthy, to eat organic-type food. That, I believe, is a challenge.

[Hispanic male]

In addition to a lack of healthy food options, participants also identified an abundance of unhealthy food options prohibiting access to healthy food stores. The same participant quoted above provided an exemplar of the perspective of lack of access in the neighborhood.

I noticed that like the [supermarket] that used to be there isn't there anymore, and it looks like some of the buildings are kind of run-down and it looks like some of them were maybe abandoned...So I'm guessing over time, the nicer grocery stores moved out because of issues with people stealing things and I don't know, I guess it's cheaper...for people to franchise fast food restaurants, and so we had a lot of fast food restaurants that have popped up...there really aren't any restaurants where you sit down and eat, actually... any fast food restaurant you can think of is probably there.

[Hispanic male]

Several participants suggested the abundance of fast food restaurants and other unhealthy eateries as an avenue for intervention at multiple levels, including community and policy efforts. Some participants suggested, 'I guess we could ban fast food places', as an extreme measure, while another Hispanic male suggested holding local farmers markets and partnering with fast food companies to increase healthy options available, because '... They have a lot of responsibility for those young kids. They're like 18 and 19 years old, and their cholesterol is way up there. Their veins are all clogged up. It's nothing but cheeseburgers and pizza. They should be the ones that help the most'.

Participants also discussed the lack of infrastructure for physical activity as contributing to the obesity problem in their community. One African American woman discussed that there were 'few areas of where you can really go and do things'. However, others acknowledged that they were aware of things being done in their communities to increase opportunities for physical activity.

Well, they've done a lot of renovating in the last few years. I know there's that [park], which is very close to where I live, so that's good. People are outdoors, people are walking, so that's a good thing. I know they have a farmer's market. I think we need more places like that, where people can come out and exercise, even by walking around with their families it's going to benefit them.

[Hispanic female]

Many participants believed safety impacted the accessibility of physical activity resources. One Caucasian woman discussed safety for adults and children.

If, in an urban area, if you don't feel safe walking around your block at night, you're not going to get out and walk. So, if we don't have safe environments for people to exercise in, then we're not going to – it's easier to put kids in front of a television because you don't want to risk them being on the street.

Similar to healthy food options, an African American woman stated, 'The cost was becoming prohibitive, to pay for the exclusive gymnasium fee in these challenging times'. Specifically referring to children, the participant suggested, 'Parents themselves do not put their kids in activities, or maybe it's too costly for them to put them in activities, or a single parent doesn't have the time to take them to children's sports activities', further limiting physical activity opportunities and contributing to the obesity problem in adults and youth.

Although not discussed as frequently, when discussed, access to affordable health care and providers who can help guide community members was a big concern and listed as both contributing to and a consequence of obesity.

There's no facilities...for these people that don't have any insurance to go to a doctor...If they had facilities nearer to the areas that are out there where I live, I bet you a lot more people would be going to the doctor and taking care of their health. And with special diets that are offered for their, you know, they find out their sugar is high or something, they'd be able to go to...they'd be able to get on medication and then lose weight, because they know they have to lose weight or else – they won't be so sick.

[Hispanic male]

It's costing everybody...a lot of the healthcare issues are related to obesity problems, or generated from obesity. So if we're trying to combat the rising cost of healthcare... Obesity, largely, contributes to it. I know, because I was paying a ton of money every year just on my healthcare being a diabetic. Thank God I had a job. But, still, the cost of that healthcare was ridiculous. Now, to where I'm not taking any insulin, any medication, because I got my obesity in check – major difference. I feel the impact on my pocketbook.

[African American female]

Awareness and education

When asked how we should solve the problem of obesity or get people to eat less and exercise more, participants mentioned increasing awareness and education as an important part of solutions.

EDUCATION NEEDS—One African American woman, who identified heart disease as a problem resulting from obesity, described the type of awareness needed and stated, 'Awareness ... better ways of eating habits – talking to them about the risk, what could happen to you, what...with the genes, their grandfathers ... just look at your family history and try to educate yourself and be aware of what could happen to you if you don't change your ways of...your health'. This participant also described how to increase awareness, 'I feel like, you know, the community should ... get involved in trying to help the people out in the neighborhood ... you know, just educate them...so they can be aware of the obesity and heart disease and any other illness'.

Although a few participants strongly believed in specifically educating on nutrition and/or physical activity, most believed that researchers needed to educate individuals and communities on the health consequences of obesity through local programs, churches, schools and media campaigns. When asked about how she would approach this, one African American woman said, 'I would try to talk to the people first of all. "This is what could happen to you." Educate them ... just let them know, don't do it because you want to look good, but the main reason is your health because people are dying so young of obesity, of diabetes, and heart disease'.

EARLY EDUCATION—When discussing the importance of educating people on obesity, good eating habits and physical activity, many discussed the importance of ‘teaching children at an early stage in their lives [about] healthy lifestyles’, and ‘starting kids off young with eating, teaching them, or making available to them healthier foods’. A few participants specifically discussed the lack of nutrition education in schools and discussed this as an important avenue for intervention in youth.

I’ve noticed that children not knowing where food comes from—in addition to that—how it’s grown, how it’s prepared. The nutrition is not being taught in the school ... Today it’s more—in terms of—standardized tests, TAKS tests, to meet the educational goals, and I’m not sure where nutrition falls in ... Not many schools have such programs—maybe at the high school, and then that’s on a voluntary basis versus mandatory.

[African American male]

I’d advocate every school have a school garden – every community have a community garden, because you can learn everything you need to know in the garden. You can do reading, math, geography, learn the history of plant cycles. There are whole curriculums that are built around gardening.

[African American female]

In addition to using school and community gardens as an educational tool, many discussed the utility of gardens for exercise and mental health.

Well, gardening ... it’s a physical activity ... You see the children that are so-called hyperactive or whatever—you see them mellow out when they’re working out in the yard. Even some communities have used gardens to have the kids that have to work off their Class A misdemeanors and stuff—they’ve had them come out and work they’re time off. You can use it as a focal point for basically anything. [African American female]

Coordinated efforts

All interviewees believed it was vital to coordinate efforts to reduce the prevalence of obesity in their communities. One participant described this as there being ‘some kind of centralized communication system. I see a big lack of that’.

[We need] to have a central of resources ... the focal point for information ... Some kind of centralized, as much as you can, resource base for information would be good... You’re tying all these resources, you’re tying in the Texas Obesity Research Center and you’re tying in a list of farmers in the area or your tying in a list of community gardens or you’re tying in community centers that are offering whatever.

[African American female]

Another person stated, ‘We’ve got a lot of silos working independently and I think if we all work together, we’ve got a better shot at making things, positive things, happen. I think independently, we have a lot less of a chance to affect the environment, the politics ...

There's strength in numbers, clearly ... my hope and prayer would be that all the people advocating for healthy behaviors could come together and work together and start changing our culture'. In addition to working together, participants discussed the importance of expanding on existing solutions and programs and how to link resources.

Well, those community organizations that already exist already have a foundation. They already have people who are engaged in that organization. They have a natural distribution process, so you're not reinventing the wheel ... So, you take advantage of programs that are already out there and have a component already built into it. How do you link them all together? Because they're not getting into some communities we need them to get in ... you've got to find that natural link and what it means to people in those organizations and so the natural tie-in.

[Caucasian female]

When asked specifically whom we should include in the *Science and Community* partnership, participants discussed partnering 'with the schools, with daycare centers, and other local organizations – maybe sororities, fraternities, and civic clubs. Because ... we all intermingle at some point, and it's all around. It's not just this group or that. It's not limited to a certain kind of person. It affects all of us. Kind of like breast cancer. It affects everybody in some kind of way'. One Hispanic female stated, 'Doctors and nurses are experts in what they're doing and what they research, so I think that that's important to have. They can train people in the community to have different workshops. They can facilitate some of the meetings. They can have forums where parents can ask questions, and, being experts, they can help the community a lot'.

Participants believed that the schools were an important partner, not solely for providing nutrition and physical education as part of the curriculum, but for using teachers and peers as role models and for training future leaders.

[In the schools] You have opportunities to teach high school students to be peer leaders or to give them opportunities to go and teach information or teach this [health] education to middle schools or to elementary schools ... They're more technologically savvy, so using them to help promote programs to help with the whole social networking, to help reach that audience – that would be a great way for them to be engaged.

[African American female]

Many stated strong leadership was key to successful initiatives and said, 'It starts at the top ... So, in a community, it needs to start with whoever leads the community – whoever the leadership in the community is ...[to] bring in the stakeholders, the schools...other private schools, and the grocers and the businesses'.

A comprehensive approach to obesity

Participants believed a comprehensive approach was needed, including coordinated social, environmental and policy approaches. When asked to describe the ideal program, one African American man said, 'I would look at the four prongs – the home, the community,

the school, and the legislation'. Many discussed similar strategies that would target the individual, their social environment, the built environment and policy efforts. Participants recognized the direct impact that changing environments can have on people and communities and specifically discussed the home, social and work environments and the built environment and policies related to each of these settings.

SUPPORT SYSTEMS AT HOME—Many participants discussed providing a supportive environment in both the home and community settings as essential for adopting healthy behaviors and talked about involving spouses, children and extended family members in the program to provide a support system.

You have to get them engaged in some sort of support system because they may not always have support at home. You may say, 'Mommy is really trying to lose weight. I need to be healthier.' ... 'I've got high blood pressure. It can make me very sick.' But if your husband is coming home every day demanding huge portions of this or that or 'I have to have dessert at every meal', that really messes up what you want to do... You have to get that support system engaged in the program, so they have to be included as part of it so they understand their role in helping their loved one ... to be successful.

[Caucasian female]

CULTURE AND THE SOCIAL ENVIRONMENT—Culture was a predominant theme, which many claimed is 'based upon a lot of food'. One African American woman stated, '[African Americans] pride ourselves in how well we can cook. And somebody has to eat it ... We tend to cook more, eat more, and siesta a lot, meaning we stay at rest instead of going out there and doing something active to ... help the food go away'. Another participant told a story to highlight the importance of addressing culture in programs to prevent and control obesity.

One of our health promotion people ... was helping someone with a weight reduction program – a healthy eating program – and it [included] writing down everything you eat... And the woman wasn't having any luck, so our counselor actually said, 'Can I come to your home and kind of observe you making a meal or have a meal with you or anything and just eat what you usually eat?' ... The woman happened to be Hispanic, [and] she realized the woman was eating seven tortillas a day which was about 1200 calories. But the woman wasn't putting that in her journal 'cause to her that was her instrument – that [the tortillas] was her fork or her spoon – it wasn't food because that was her culture. Until you understand that, you don't know how to talk to people and say, you know, 'Included in that is a tortilla. You may not think of it as food. It is a food'.

[Caucasian female]

Other participants discussed addressing culture to ensure everyone has the same definition of obesity. One woman said, '[In] African American culture, [it's] okay to be a little thick. Not a big deal. Other cultures, if you've got certain body parts that are like, whoa, you're too fat. So helping people to really understand what obesity means, and can you even come up

with a common definition of it that's really applicable to every audience that you're dealing with, every ethnic group that you're dealing with ... it goes back to those pocketed communities and understanding what they're concerns are and what they consider obesity challenges'.

WORKSITE WELLNESS—In addition to the social support provided by friends, family and community members, many participants advocated for work environments that support a healthy lifestyle. One female participant adamantly demanded, 'We have to find some way for the workplace to promote healthier lifestyles because people are at work 8 to 10 hours a day. They get a lot of influence from the work, so if you try to live healthy at home but you go to work and everybody's wanting to order in kolaches every morning because that's okay, it's not reinforced. So, I think that's a gap that we have ... We're not talking about it as much as we should be in the work setting'. Others went on to suggest options for incentivized programs in the workplace, such as reduced gym membership fees or monetary awards for healthy habits, and other solutions, such as paid time for physical activity or insurance credits to physically active employees.

THE BUILT ENVIRONMENT AND POLICY CHANGES—The majority of participants discussed specific policy changes that would alter their neighborhood food and physical activity environment as a solution to the obesity problem. Participants stated, '...City leaders could be more intentional about that in terms of saying, "We're going to dedicate funds for X number of miles of trails every year." ... making sure there's a park accessible to every community. Things like that—sidewalks. Go back to safety as well; making sure our neighborhoods are safe for people to be outside exercising'. To tackle the neighborhood food environment, participants discussed their desire for zoning restrictions in their communities in conjunction with 'incentives for grocery stores, for farmers' markets to be in that community, for the people that do grow fruits and vegetables, some incentives for them...to sell to the people in their community'.

ADDITIONAL POLICIES AND LEGISLATION—Several participants discussed additional policies directed at manufacturers and the media to improve healthy eating habits and reduce the prevalence of obesity.

Restrictions on availability of fast food, refined foods in general I think would help. Labeling, I think the warning labels, [on] products that contain sweeteners or flour primarily... heavily salted products ought to have a label on them, on the front, clearly identifying what's going on there. Labeling on refined food products is phenomenally deceptive ... these refined foods should not be available [to] children. I mean, I just think that's a given. Other policies – I think litigation. At some point we're going to have to start litigating these food manufacturers. They're causing early death. We all know somebody who's dying in their 40s or 50s from a diet-related disease. So, I think those are the policies that would work.

[Caucasian female]

Others discussed a fast food tax as a policy option and solution.

I don't think that there's anything wrong with adding an extra tax on fast food. But it's just like ... smoking. I would say that smoking would be very similar. Smoking and fast food kind of fall in the same categories. So you can tax smokers because they're buying cigarettes. Why can't you tax people who are buying fast food because they're the ones who are using up a lot of the healthcare resources because of that? I think when you hit somebody in their pocketbook like that, that's when they're going to really open up their eyes and make a change.

[Hispanic female]

DISCUSSION

This study gained community insight into obesity prevalence, causes and solutions among a sample of predominantly African American and Hispanic or Latino participants from the Houston community. Participants were largely aware of the problem of obesity and believed that lack of access to healthy food options and safe, quality physical activity resources was a large contributor, consistent with previous qualitative research among African American and white adults (Kegler et al. 2008). Participants also addressed the issue of easier, cheaper access to unhealthy food options and talked about how food deserts potentially developed in their communities (Wahowiak 2013). While not uncommon in the United States, food deserts and the food swamps they create contribute to poor dietary habits and increased odds of obesity in these neighborhoods (Larson, Story and Nelson 2009; Dubowitz et al. 2013). Several participants believed that there was an overall lack of awareness of the consequences of obesity and obesity-related behaviors, such as physical inactivity and poor dietary habits, in their community and that education and intervention efforts are needed. Participants discussed potential solutions, which were framed in an ecologic framework, as shown in fig. 1. Although participants did not have prior knowledge about existing models and frameworks for obesity prevention and control, the interview guide was developed within an ecologic framework, which may have influenced how participants responded to questions.

Participants specifically discussed individually focused obesity prevention strategies but also emphasized that community-wide obesity education efforts were needed. Previous research efforts have demonstrated that addressing sociocultural factors in obesogenic environments is important for improving health behaviors in the short term (Ulijaszek 2007). However, improvements resulting from individually focused strategies are usually not substantial or persistent (Huberty et al. 2008), suggesting the need to address factors beyond the individual. Family or community obesity education and intervention programs show promise for modest but sustainable improvements in physical activity and dietary habits (Fotu et al. 2011; Watson-Jarvis, Johnston and Clark 2011) and partially address participants' desires to better educate the community.

This study used an ecologic framework to better understand individual, social and environmental factors related to obesity, physical activity and dietary habits from community members' perspectives. Ecologic approaches recognize that health behaviors, such as physical activity and dietary habits, are influenced by multiple levels and can serve

as a guide for intervention strategies to address public health challenges, including obesity (Ockene et al. 2007). Combining these approaches with input from community members through participatory research has been successful on a small scale (Wilcox et al. 2010, 2013), suggesting potential for broad-based dissemination and reach. However, previous studies utilizing both ecologic and participatory approaches have not explored the dynamic linkages between levels, represented by the meso- and exo-systems, which allow communities to leverage resources and may enhance behavior change (Ockene et al. 2007). The use of the ecologic model to guide this study is unique in that it allowed the community to give voice to their perspectives and express what they believed were the causes of obesity and possible solutions. Nearly all participants in the current study echoed the need for coordinated efforts among organizations and across levels and cited the worksite as an example of a key component in community obesity prevention and control efforts. Previous work has shown worksite interventions targeting the social and physical environment lead to significant improvements in nutrition (Biener et al. 1999) and physical activity (Byrne et al. 2011). One worksite intervention paired with a family-based program led to larger improvements in healthy dietary habits than a worksite intervention alone (Sorensen et al. 1999), further supporting the idea identified by interviewees that worksite wellness and community- or family-based programs are complimentary and coordination among them is essential. With this in mind, the National Institutes of Health and Centers for Disease Control and Prevention convened a workshop to address chronic disease risks at worksites (Sorensen et al. 2011). Similar to *Science and Community* study participants, workgroup members developed a conceptual framework and identified three intervention targets: individual health-related behaviors, the work–family–community interface and the work environment (Sorensen et al. 2011).

Participants also identified the need for policies to enhance the physical environment to promote access to healthful foods and quality physical activity resources. Many called for zoning laws and enforcement, limiting the availability of fast food restaurants and unhealthy food stores, which were cited as main contributors to the problem of obesity in their communities. Simulation and small-scale studies have shown the effectiveness of zoning policies to change the food environment in disadvantaged communities (Chen and Florax 2010; Sharkey et al. 2011). Similar policies have been implemented in school environments successfully (Hoelscher et al. 2011; Taber et al. 2011), suggesting that community-wide implementation may improve dietary habits among residents. Zoning policies also show great promise for helping community residents do regular physical activity (Christian et al. 2011). Recent policy briefs and reports have further supported participants' demands for policy changes to reduce the obesogenic environment surrounding their communities (Carlson et al. 2011; McKinnon, Bowles and Trowbridge 2011).

Participants in this study were volunteers from a larger academic–community partnership and represented a variety of occupations. Although recruited from the community at large, most partnership members were employees of or affiliated with community health organizations and may have joined the *Science and Community* partnership for both altruistic and work-related reasons, such as networking or recognition for their organization. Thus, results represent people who were interested and motivated to join the *Science and*

Community partnership and participate in the qualitative component of the project, which may limit generalizability of findings. Recruitment of Hispanic or Latino men was an ongoing challenge both in the larger study and in the qualitative component, presenting another limitation. Therefore, findings may not be inclusive of all community voices, such as low-income Hispanic or Latino men and non- or limited-English-speaking community members, who are often underserved, under researched and most vulnerable to chronic diseases, including obesity. Although CBPR strategies are useful for building trust within communities and establishing a partnership, reaching underserved and ethnically diverse communities remains a challenge (Bopp et al. 2012), and additional work is needed to gain insight from hard-to-reach populations and determine strategies for obesity prevention and control that fit within their culture and lifestyle.

Although participants cited potential causes of obesity and solutions, we are unable to determine the source of these beliefs, or whether they are their own opinions or information gained from community resources and outlets or the media, further limiting our ability to completely understand causes of obesity within a community. Future studies should evaluate the sources of obesity information participants have been exposed to previously to better understand how to reach community members at large and address the limitations of the current study.

Results from the current study support and expand the literature and current recommendations and call for coordinated, multisector approaches to address the complex problem of obesity and contributing health disparities among adults and youth within an ecologic framework (fig. 1). Although most research starts with a guiding framework or model, the current study shows how to incorporate the community's perspective to adapt existing models, which can be used to develop educational programs and interventions that are meaningful to the community and therefore more likely to be adopted. Findings from this study can be used to guide coordinated efforts to improve dietary habits and increase physical activity among population groups most vulnerable to obesity. It is important for policy and decision-makers to address community concerns and ensure access to quality food and physical environments for all community members. Community insight gleaned from this study can be used to enhance relevance and sustainability of programs developed to reduce obesity and suggests possible avenues for participatory research and intervention.

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Figure 1.
Results presented within an ecologic framework.