Achieving Health for a Lifetime: A Community Engagement Assessment Focusing on School-Age Children to Decrease Obesity in Durham, North Carolina

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Abstract

**BACKGROUND**—Obesity is a prominent problem in the United States and in North Carolina. One way of combating it is with community-engaged interventions that foster collaboration between health-oriented organizations and community residents.

**PURPOSE**—Our purpose was to assemble a multifaceted group in Durham, North Carolina, to identify factors affecting obesity-related lifestyle behaviors; assess policies, resources, and the population’s perception of the problem of obesity; and develop plans to improve health outcomes related to obesity.

**METHODS**—A team consisting of more than 2 dozen partners was assembled to form Achieving Health for a Lifetime (AHL) in order to study and address obesity in the community, initially focusing on elementary school-age children. The team developed a resource guide by collecting information by telephone interviews of provider organizations; geospatial resource maps were created using high-resolution geographic information systems, Duke’s Data Support Repository, and county and city records; and focus groups were conducted using the nominal group technique.

**RESULTS**—The AHL team, in collaboration with 2 other teams focused on diabetes and cardiovascular disease, identified 32 resources for diabetes, 20 for obesity, and 13 for cardiovascular disease. Using Geographic Information Systems (GIS), the team identified an area of Durham that had only 1 supermarket, but 34 fast-food restaurants and 84 convenience stores.

**LIMITATIONS**—The focus on particular neighborhoods means that the information obtained might not pertain to all neighborhoods.

**CONCLUSION**—The AHL team was able to assemble a large community partnership in Durham that will allow the members of the community to continue to work toward making residents healthier. Communities facing similar challenges can learn from this experience.

Obesity in both sexes and all age groups has become a prominent problem in the United States. The city of Durham in North Carolina, like many cities in this country, has many individuals who are obese. The Durham County 2011 Community Health Assessment notes that 65% of adults in the county are overweight or obese [1]. Obesity is more prevalent among blacks and Hispanics than among whites throughout the United States [2], and in the city of Durham, 41% of the population is black and 14.2% is Hispanic [3]. Obesity is becoming more prevalent in children as well as adults. Nationally, 16.9% of children are obese [4], and in Durham County, 20% of children are obese [1].

The scope of the problem in Durham has stimulated a team of researchers, clinicians, and community members to develop a proposal for reducing obesity, starting with elementary school children. The project, called Achieving Health for a Lifetime (AHL), will then expand to include older and younger children in schools and eventually parents and older adults in the communities surrounding the schools.
Recommendations regarding diet, physical activity, and other behaviors have been widely disseminated for decades. Some experts in the United States now believe that in order to better manage the problem of overweight and obesity, national policy changes are needed that might have an effect on citizens’ dietary and physical activity habits [5]. Multidimensional approaches that include policy change and combine the resources of public, private, and philanthropic organizations to ensure a coordinated and sustainable long-term effort can also be effective when initiated locally, as evidenced by recent research [6-13]. However, such an approach is likely to be successful only after a proper community assessment is carried out in partnership with the community in which one hopes to initiate change. Following the examples of the city of Somerville, Massachusetts, the city of Chicago, the state of Delaware, and others [6-10], AHL used community meetings, interviews, focus groups, and advisory councils to assess existing local services and gaps in those services, and to solicit input, support, and assistance from a range of sources.

Community engagement is defined as the process of working collaboratively with groups of people who are affiliated by geographic proximity, special interests, or similarities in their situations with respect to issues affecting their well-being [14]. The process helps communities take responsibility for their own health promotion and disease prevention by involving health professionals, community residents, and other stakeholders in all steps, from needs and asset assessments through program planning and implementation and then evaluation. True equality of leadership and respect for all opinions is fostered by open communication, efforts to achieve a common understanding, coordination, collaboration, and finally, forming a partnership to work toward a common goal [15-17]. Furthermore, community engagement presents a significant number of opportunities and challenges that should be carefully considered prior to embarking on a large-scale partnership. In order to achieve success, researchers using the process of community engagement need to have a solid understanding of its theory and practice.

AHL is a unique community engagement project conducted in Durham, North Carolina, and sponsored by Durham Health Innovations (DHI), which is a partnership between Duke University and the Durham community that seeks to improve the health of residents of Durham County. DHI is funded by Duke University, through a Clinical and Translational Science Award that Duke received from the National Institutes of Health, and by contributions from community organizations. AHL was formed to assemble a large community group to identify predisposing, enabling, and reinforcing factors for obesity-related lifestyle behaviors; to assess policies, resources, and circumstances in Durham that facilitate or hinder efforts to improve these behaviors; to assess the target population’s perception of the problem of obesity; and, based on the results of those assessments, to develop plans to improve measurable health outcomes related to obesity in Durham and tailor those plans for specific communities or populations [18].

The AHL project follows a social ecological framework to promote behavioral changes in dietary habits and physical activity [19]. The social ecological framework incorporates all aspects of the individual interacting with his or her environment, including the following: individual-level beliefs, attitudes, behaviors, and medical considerations (if any); family relationships; community practices; social, organizational, and cultural norms; and public policy. In the case of AHL, the individual is the school-age child and the interactions are mediated by the school. This focus was chosen based on feedback provided by stakeholders involved in the early stages of planning. The belief was that intense intervention on behalf of elementary school children could help slow the rising incidence of childhood obesity and prevent its complications. In addition, schools can serve as focal points that can eventually be used to reach a wide age-range of people in the community. Policy, infrastructure, and commercial changes were identified as additional impactful elements of such a community
intervention; however, they were also perceived to require greater resources and a longer duration to realize their impact. Focus on those elements was therefore deferred until the intervention becomes more established in the community.

Another important attribute of the social ecological framework is that it recognizes the societal and cultural perspectives of people of different ages, genders, races, ethnicities, and socioeconomic backgrounds. It examines how all of these different perspectives converge to influence individual behavior and provides the opportunity to develop a consumer-guided intervention that meets the community's existing needs and fills projected gaps in service [20]. This approach also facilitates partnerships among health care organizations, other health-related programs, and the community, stimulating these parties to contribute to decision-making. This process tailors the approach to the specific community or population, coordinates and expands local opportunities, and fosters ownership regarding the plan of care. Application of this model to the issue of childhood obesity has resulted in identification of the following spheres of influence as contributing to a child's propensity for weight gain: genetic environment, family environment (ie, behaviors modeled by parents and other household members, shared foods and activities) and community/social influences (eg, government and school policies, built social and geographic environments, sociodemographics) [21].

The purpose of this article is to offer information regarding the AHL experience and the results to date of the initial steps described above in order to demonstrate the processes and intricacies of community engagement in a metropolitan area in the South. Our goal is to further inform the development of similar programs by communities around the country interested in resolving health problems affecting their populations, particularly obesity.

**Methods**

**Research teams and community engagement**

DHI initiated a call for proposals in the fall of 2008. Parties interested in improving any aspect of health in the Durham community were invited to form teams and submit proposals. The main charge to these teams was to propose an economical and sustainable strategy aimed at improving a widespread health issue in Durham using community and university resources and representation. Multiple teams competed for support, with only 10 teams receiving grants.

The AHL team focused on obesity and was made up of groups focused on adult, childhood, and minority obesity as well as the effect of health on school readiness. The AHL team included members from community organizations and from Duke University Medical Center, and those members were organized by a project manager with roots in both settings. Community engagement was accomplished by having all team members brainstorm names of community organizations that might be interested in participating, especially in the community assessment. Community organizations representing many segments of the Durham community were invited to an initial meeting, which took place after the AHL team received funding. A total of 50 community organizations attended. From this effort, the AHL team convened more than 2 dozen community partners (Table 1), who attended a series of planning meetings over a 2-year period. Attendees included representatives from local government, religious institutions, civic clubs, private businesses, and grassroots nonprofit organizations. The complete AHL team, including all of the community collaborators, met quarterly. From these partners, a steering committee was formed consisting of the representatives from the organizations most central to the model being developed. The steering committee met every other week and designated additional
committees to accomplish such things as developing a resource guide, constructing resource maps, and conducting focus groups. The work of these committees is detailed below.

The resource guide

The resource guide was developed via collaboration among 3 of the 10 DHI-sponsored teams—those for diabetes, cardiovascular disease, and obesity. DHI encouraged collaboration, and the teams themselves decided to collaborate. The teams identified and categorized local events, facilities, and organizations in the area of health care for these related health areas. This resource guide was developed through a 3-step process. First, representatives from all 3 teams brainstormed what types of organizations should be included in the resource guide and what types of information should be collected about each organization. Next, a questionnaire to standardize the collection of the desired information was developed by a resource guide subcommittee formed from members of the 3 teams. And finally, 5 nursing student volunteers, supervised by the resource guide subcommittee chairman, telephoned each identified organization, administered the questionnaire, and solicited the names of any other programs that should be contacted.

The geospatial resource maps

The DHI teams, in conjunction with the Nicholas School of the Environment at Duke University, used high-resolution geographic information systems (GIS) and geospatial mapping techniques to visualize community-level resources in relation to health data points, environmental variables, census data, zip codes, and environmental factors in order to examine and understand the interrelationships between mapped data and other related community-level factors such as health outcomes, health disparities, and access to care for particular populations. Duke's Data Support Repository provided de-identified, aggregate clinical and business data regarding receipt of care from the Duke University Health System. Community data came from published government reports as well as from surveys and focus groups conducted by academic institutions and community nongovernmental organizations. The following are examples of the types of locational information that were requested for the AHL-specific maps because their frequency and proximity may impact individual behavior: health care facilities and the types of care they offer; walking trails and other exercise options in various neighborhoods; and grocery stores, convenience stores, and restaurants.

This spatial analysis makes it possible to reveal hidden trends, novel approaches to the examination of access to care and other resources, and novel intervention strategies for improving health. By matching previously unlinked data sets such as health data records to their corresponding location (ie, their specific latitude and longitude, as for individual tax parcel units), spatial patterns can emerge that were not evident when the data were viewed in tabular or statistical formats [22]. These patterns, determined through model-based inference and displayed graphically, can be powerful outreach tools that show the community where problems exist and where vulnerable populations reside, thereby identifying areas that are ripe for intervention and policy change. This process ensures that targets and strategies are based on solid research findings.

Focus groups

Our team conducted 6 very pointed focus groups to assess the target population’s perception of the problem of obesity. These focus groups used the nominal group technique for achieving consensus developed by Delbecq and VandeVen [23]. Because Durham is a city in which many focus groups and surveys have been conducted, sensitivity to research burnout was needed. Therefore, our team focused on gathering the information from a diverse group of people in the community, who provided a very broad range of perceptions.
of how obesity affects the community. We conducted focus groups with parents of overweight children (in English and in Spanish), overweight adolescents, overweight or obese individuals with chronic diseases (in English and in Spanish), and adults who had successfully maintained weight loss.

Results

Resources identified to address the problems

A resource guide to Durham's health landscape summarizing available resources was created. It included the following information for each entry: name of organization, institution, or business; contact information (address, phone number, Web site, contact person); mission statement; target population; detailed description of service(s) provided; and availability of translation services for those who do not speak English. In total, the teams identified 32 resources for diabetes, 20 for obesity, and 13 for cardiovascular disease. These are all listed in a spreadsheet titled Durham Primary Care Landscape, which can be found at https://docs.google.com/spreadsheet/ccc?key=0AqmbZqmq7HxKcmdmYXN5c2pPRDgtOFRCUnFZVEwyS2c&hl=en#gid=0. The obesity resources are provided by Duke University Medical Center (Telepharmacy Project, Project Access, Project LATCH), Durham County Health Department (Care-a-Van, Community Outreach/Health Educators/Nutrition Education/DINE for LIFE, child care nutrition consultation project, Wellness for Life), Durham Parks and Recreation (parks and recreation), Durham Community Health Network (community-based managed care program for Durham Carolina Access), US Department of Health and Human Services (El Centro Hispano, Inc), and 8 community nonprofit organizations (Marian Clinic; Samaritan Health Center; Healing with CAARE, Inc; Lyon Park Clinic; Walltown Neighborhood Clinic; Diabetes Sisters; Structure House, LLC; Union Baptist Church Health and Wellness Ministry). To keep this list of resources up to date, the community organization Partnership for a Healthy Durham has been recruited to maintain the landscape spreadsheet.

These resources are some of the entities that were mapped via GIS coordinates. In addition, GIS was used to create preliminary maps that identified the locations of nutrition resources such as convenience stores, fast food establishments, restaurants, and grocery stores, and physical activity resources such as parks, youth services, and gyms. These maps show that resources are not evenly distributed throughout Durham. For example, in northeast central Durham, the community represented in Figure 1, there is only 1 supermarket; however, there are 34 fast-food chain restaurants and 84 convenience stores. Also, the geospatial map shows that northeast central Durham has few parks and no trails (Figure 2). On a map showing the location of resources, shading was used to indicate whether a high or low percentage of the population in a given area has a body mass index (BMI) of 30 or greater, indicating that they are obese (Figure 3). The geospatial maps demonstrate that areas in which many residents have a high BMI, or belong to a minority group, or have low socioeconomic status may overlap (as is the case in northeast central Durham, for example), and that these areas have more convenience stores than grocery stores, more fast-food restaurants than other types of restaurants, and fewer parks and youth facilities, including gyms.

This information influenced 2 decisions made by the AHL team in formulating its final report and implementation plan to DHI. The first was our decision to concentrate efforts in those areas in which there are gaps in services as evidenced by the resource guide and GIS maps. And the second was to use our social ecological model approach to address obesity in areas where many partner organizations already exist and to focus on a group for which it is easy to rally support—young children. The planned strategy was to establish an intervention at 1 elementary school in a community and then expand to other schools and eventually the
rest of the community. Schools can be an accessible and unintimidating location for meetings that include students, their immediate family members, relatives in their extended family, and even unaffiliated members of the community. Furthermore, if healthy changes are first made at schools by the students and staff, those changes could then spread to the families and extended families of the students and eventually to the entire community.

**Focus groups**

The focus groups reported that community members ranked obesity highly among problems deserving more community education, services, and policy change; that finances, bad habits, stress, inactivity, temptation, and lack of motivation are barriers to weight management; and that social support and improvements in appearance, energy, and self-esteem provide motivation to manage one’s weight.

**Discussion**

Using a community-engagement approach, the AHL team successfully assembled a large partnership bringing community and academic institutions together to address a particular persistent and prevalent health problem in the local population. This type of approach has the potential to benefit community members, health care professionals, and researchers alike [24]. Both innovative and inclusive, it emphasizes the importance of building trust with community members, finding shared interests, and building on existing strengths while addressing gaps and barriers [25]. Building trust within the community is a key component of success in conducting community participatory research, especially in a community such as Durham, which may be overexposed to research because of its proximity to large academic institutions. The AHL team focused on building trust in a number of ways such as by conducting formal and informal meetings with community members and holding these meetings in locations within the target community; by ensuring that community leaders had prominent roles on the team; and by ensuring that community leaders’ contributions to the team were visible to the community. Further, during the process, we emphasized that we were not simply collecting data—our main focus was improving the community.

The partnership was assembled based on a common interest: decreasing obesity in Durham. The team built on existing strengths by involving existing structures and organizations, and resources already available in the area. By taking a community-based participatory approach, the AHL team was able to obtain valuable information regarding the community’s perception of the obesity problem. Without such input, professionals and researchers can lose sight of how difficult it is for underprivileged individuals to follow basic weight-management recommendations, such as eating more fresh fruits and vegetables. They face such barriers as a lack of grocery stores in proximity to residential areas, a lack of transportation that would allow shopping at grocery stores outside the neighborhood, and the high cost of healthy food. These barriers must be overcome. It will not suffice just to disseminate messages.

The GIS findings of the study support this lack of grocery stores. Using GIS, the team was able to identify areas of Durham in which a greater percentage of the population had a high BMI and lower socioeconomic status. Furthermore, they found that these areas had more convenience stores, fewer grocery stores, more fast-food restaurants, fewer restaurants of other types, and fewer parks and gyms than did other areas. A wealth of research has shown that it is an unfortunately common phenomenon for poorer and ethnically diverse neighborhoods to have fewer grocery stores with healthy food choices, more convenience stores, and a greater density of fast-food restaurants [26].
Despite our success in building a robust community partnership, we faced several challenges throughout the process. During the initial creation of the AHL team, which arose from the merger of 3 separate groups that focused on different aspects of the problem of obesity, we encountered issues such as difficulty maintaining the interest of some of our community and academic members. We lost partners for several reasons, including lack of time, inadequate funding, and disagreement among team members over the project’s mission and leadership. This shows that for this type of partnership to succeed, a great deal of time, clarity, and commitment is needed from the team members. Furthermore, it is important for those working in community engagement programs to recognize that health care professionals may be perceived as having more power than community members, and that this power differential can impede community-based research [27]. Working toward ameliorating this differential is critical in the development of a successful partnership. One way to build trust and collaboration among diverse partnership members is to develop a memorandum of understanding in which the goals, expectations, and responsibilities of each team member are described and acknowledged.

Future directions

The team has pilot-tested an intervention at an elementary school in a low-income neighborhood in Durham. Individual initiatives have targeted increasing the consumption of fruits and vegetables, delivering nutrition education to both students and their families, providing cooking classes and exercise programs (especially walking groups), and referring those who are overweight to affordable professional intervention programs. AHL also aims to eventually promote and encourage policy changes to help achieve a healthier community.

In summary, AHL was able to assemble a large community partnership in Durham that may allow the members of the community to work towards a healthier city. Our experience can inform the development of partnerships in similar communities facing similar challenges.

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References


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FIGURE 1.
Places Where Food Is Sold in Central Durham
FIGURE 2.
Physical Activity Resources in Central Durham

Note: Youth services include gymnasiums and other services.
FIGURE 3.
Proximity of Various Resources to Areas of Durham County with a High Proportion of Obese Residents
### TABLE 1

Community Partners During the Achieving Health for a Lifetime Project

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<th>Duke University School of Medicine</th>
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<td>Durham Parks and Recreation</td>
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<td>Neighborhood Improvement Services</td>
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<td>Partnership for a Healthy Durham</td>
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<td>Health Care for All North Carolina</td>
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<td>Inter-Faith Food Shuttle</td>
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<td>Union Baptist Church–Parrish Nurses Association</td>
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Note: Not all partners are still participating.