

Green Acres: A Partial Grant Proposal for a rural low-income majority African American and Latino community

By

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Green Acres

A proposal to provide an intervention within a rural low-income majority African American and Latino community.

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Background

Problem Statement.

Epidemiology of Obesity. There are very few public health crises that affect every state, every city, every community, and every school across the US, as obesity does (1). Two out of three Americans are overweight or obese (1). One out of every 8 deaths in the US is caused by an illness directly related to overweight or obesity (1). In 2000 alone, obesity cost our nation \$117 billion dollars (1). Obesity is caused by the body not expending more energy than calories consumed (1). Obesity is measured by BMI which is a measure of body fat based on height and weight. Adults who have a BMI greater than 25 are considered overweight, and adults with a BMI greater than 30 are obese (2). Children have a slightly different indicator. The CDC considers children beyond the 95th percentile for the BMI for age-gender growth charts to be obese, and children between the 85th and the 95th percentile for BMI for age-gender growth charts overweight and at risk for obesity (3).

Obesity impact on child health. There are several co-morbid conditions associated with obesity. These negative health outcomes are depressive symptoms, poor body image, insulin resistance, type 2 diabetes, hypertension, and early puberty, among many other health concerns (4). In certain high risk areas of the US where 30% of the adult population is obese, 10% of people can be diagnosed with diabetes (5), and the risk of certain conditions such as cancer and heart disease is higher (6). Overweight

or obesity affected close to 32% of children age 2-19 years in 2008 (7). When compared to data from earlier years, the magnitude of the obesity increase is illustrated clearly. In 1980, overweight or obesity in children and adolescents was 6.5% of those ages 6-11, and 5% of those aged 12 – 19 (8). These rates have risen to 19.6% and 18.1% respectively in 2008 (8), illustrating the extent to which overweight and obesity has become a public health crisis. Obese children have a higher risk of becoming obese adults who will continue to have negative health outcomes including increased risk for cardiovascular disease and certain cancers (9).

Disparities. Although overweight and obesity affect a lot of people, this crisis does not affect everyone equally (10,11). An excess risk of obesity is found in certain vulnerable populations. In the past 30 years, obesity has more than doubled for children ages 2-5, has tripled among children ages 6-11, and more than tripled among 12-19 years (8); and out of these age groups, rural low-income African American and Latino populations are affected the most.

Rural vs. Urban. One disparity in overweight and obesity is found in rural vs. urban communities (10,11). Children in rural areas are more likely to be overweight or obese than children of urban areas (10,12). Rural populations tend to eat more calories, exercise less, and watch more television, which all are factors to overweight and obesity. Also, populations in rural areas have less access to built environments that promote physical activity, healthy foods, and services that facilitate physical activity and healthy eating, have higher poverty levels, and have limited school resources to provide physical activity and nutrition education (12). Additionally, Southern States have some of the highest rates for overweight or obesity (12). For example, in North Carolina, 33.5% of adolescents aged 10 – 17 were overweight or obese compared to the national average of 31.6% based on 2007 data (13).

Race and Social Economic Status (SES) disparities. Additionally, race and income are linked to obesity (14). SES is found to interact with race/ethnicity to produce a higher risk. Thirty-four percent of African American children live in poor families and 29% of Latino American children live in poor families

compared to their European American counterparts (10%) (15). Lack of a supportive built environment including access to walking trails, parks, playgrounds, or safe areas to play that encourage physical activity, leads to a higher prevalence of adolescent obesity (4). Overall rural low-income Black and Latino populations in the Southeast are affected the most and are under-served with services (8,11). Green Acres is a proposed pilot project to serve this population.

Interventions to Address Obesity in Children. There are several types of approaches being used to address the overweight and obesity crisis (16). These approaches are often targeted to an individual or small group, and include health education, awareness, and behavior change to improve on the individual or small group level (16).

Limitations in Individual Behavior Change Approaches. The most accepted method of addressing obesity is through individual or small group physical activity and nutrition (17). While these approaches address one aspect of the problem, they are likely to only produce modest changes of 5% to 10% of initial body weight, and produce minimal long-term success (6,16). Weight loss maintenance usually averages about 2/3 of initial weight loss 12 months after intervention, and in studies that continue to follow their patients, patients gradually return to baseline a few years after the follow-up intervention ends (18). There are several locations for these types of individual and small group interventions: school-based, community-based, and physician-based are some of the most prominent (19). These approaches either incorporate a dual or multicomponent approach, usually involving both physical activity and nutrition, since both of these aspects directly affect obesity and overweight; or these approaches are single component interventions targeting physical activity, decreasing sedentary behaviors, or diet change (20). Interventions focusing on the population level, such as school-based interventions or policy change, have been found to be cost-effective compared to individual interventions but still only produce small changes (20). School-based interventions that incorporate a behavioral theory are more effective (20). For example, *New Moves*, was an intervention in adolescent

girls in a high-school setting. *New Moves* randomized six schools into intervention and control groups (21). The intervention lasted for 8 months (21). Girls in the intervention group improved from baseline to follow-up and indicated a strong satisfaction in the program, but for most of the outcome variables, which included fruit and vegetable intake and physical activity, there was not a significant difference between intervention and control groups (21).

A community-based intervention had the same type of results; the Georgia Prevention Institute (GPI) has conducted a few studies around physical activity (19). In one study, the GPI targeted adolescents ages 13-16 and used various levels of physical activity and lifestyle education classes (22). They used three intervention groups: lifestyle education classes, lifestyle education classes plus moderate-intensity physical activity, and lifestyle education classes plus high-intensity physical activity (22). After the 8 month intervention, participants in the physical activity classes had significant decreases in visceral adipose tissue compared to the subjects in the education only group (22). However, a review of this study pointed out that there was not a significant difference in the percentage of body fat between the three intervention groups (19). Retention in studies is also a problem. Even if a good intervention is implemented, getting participants to stay committed is a major challenge. And many rural participants that might be included in interventions are left to provide their own transportation, while more urban settings have local transportation or interventions can afford to provide the transportation, as described in the GIP study (22).

Further, many obesity prevention programs are implemented as research projects, which end after the grant period ends. These non-empowering research designs can leave communities feeling like 'guinea pigs' as they are left without any way to sustain the intervention once the intervention has ended (23). Further, most approaches do not allow for interventions to adjust to specific needs of the individuals (23). A review of obesity prevention methods described that interventions that target specific ages, ethnicities, and income levels are needed because as obesity has increased across these

categories, there are sub-populations who are more affected without appropriate interventions. These populations include very young children, perhaps because parents think that they will grow out of overweight or obesity, which could be linked to breast feeding or formula feeding (19); African American and Latino populations often have interventions that are not culturally relevant (which GEMS and Pathways have proposed examples of culturally relevant interventions (19)) and low income populations are the most affected by overweight and obesity rates (19). As in the GIP intervention earlier, if an intervention is in an urban area, and a rural low-income adolescent is recruited he/she might have to provide their own transportation to get there. Further, this adolescent is likely to depend on someone else for a ride, and the driver may be unavailable, which would interfere with intervention retention rates. Additionally, these interventions do not take into account the differences in approach needed to reduce the disparities as well as reducing rates of obesity (16).

Cultural norms and resources available to certain ethnic groups, and low SES and rural communities, can influence a person's perspective on overweight and/or obesity, their access to healthcare, and their ability to carry out recommendations for behavior change. For example; since a major recommendation for weight control is to exercise more, the environment must support that activity for it to be safely carried out (16). For low-income and low-resource areas, physical activity is not safely feasible where traffic is of high concern, other supportive elements of built environment are limited, and the neighborhood is unsafe (16). Many commonly used interventions designed to address obesity in these communities do not address the multiple levels of influence on the causes of obesity, and thus do not address the social and economic complexities contributing to health disparities (23).

Multi-level Approaches. The IOM, CDC, and supporting evidence from research agree that the most influential method of addressing health disparities in the overweight and obesity crisis is through a multilevel approach (16). Individual approaches often do not address complexities in vulnerable groups, have difficulties in retention, and only achieve small weight gains (19). Increasing evidence is showing

that a multilevel approach to overweight and obesity is needed (6,16). A multilevel approach could involve the family, community, schools, and policies. A present attempt to this is the First Lady's Let's Move campaign to fight against obesity. Her campaign offers education packets and steps for all levels to engage in anti-obesity action. There are education packets for: city officials to join a city-wide anti-obesity campaign; school systems to incorporate dietary and physical activity changes within the school system; community groups such as churches to support individual dietary and physical activity choices, and for families to make changes within the home. All these different levels working together help the individual to make healthier choices and be supported in those choices whether they are in the city, in school, in church, or at home.

The ecological model (figure 1) offers a framework of the levels that affect the individual's ability to maintain health. The ecological framework models the influence of multiple levels on the individual behavior, including culture, community, policy, and is therefore a useful framework for developing obesity interventions in low-resource rural communities (16). The GEMS study mentioned earlier is an example of an intervention using more than one level by involving the individual and the family, which are two different levels of fighting obesity (24). The GEMS study addresses the parental factor in child obesity; maternal obesity is a risk indicator independent of other demographic and socioeconomic factors for a child (25). What is not considered in the GEMS model is the organizational, community, or policy level, such as church support or school support, or even the policy level of having sidewalks in neighborhoods to make walking more feasible for people within a neighborhood. Green Acres is set to use all levels of the ecological framework to achieve a larger impact.

While the ecological framework is a good start to developing an obesity reduction program for low resource communities by modeling the factors to address at multiple levels of influence, it does not address how to engage people given the social and economic complexities operative within a community. Even using an ecological multilevel framework, communities can be left feeling as if they

are being dictated to by outsiders and may be resistant to engagement because of this (23).

Intervention strategies which fit into the lifestyle and desires of the community are better utilized and attended than those that are imposed or that add additional burdens to life. Additionally, a process needs to be left in place that facilitates the community's ability to maintain the intervention after the grant period ends, and that leaves them with skills and resources to continue advocating for their needs.

Techniques of community partnered engagement can be added to operationalize the ecological framework to achieve these additional goals. Community-based participatory research (CBPR) is a method for identifying needs specific to a community and improves community engagement and long-term involvement.

Research Proposal and Aims. To address the problem of childhood obesity in a rural African American community in NC, we propose to combine the CBPR principles with the ecological model to develop a program called Green Acres. This program will be implemented within a low income, rural housing community, Chestnut Oaks, where the majority of homeowners are African American and Latino. Through Green Acres, we will operationalize the ecological model and CBPR guiding principles to increase community engagement, improve knowledge, attitudes, and skills of the homeowners, and increase community advocacy capacity to influence public policy related to community quality of life. The ecological Model provides a framework for improving long term and proximate impacts on the community that can translate into improved behaviors and culturally appropriate activities to achieve a potentially larger impact on overweight and obesity in this rural low-income majority African American and Latino population.

Specific Aims. There are three aims of this project:

1. Improve knowledge, attitudes, and skills regarding fruit and vegetable production and consumption, and increase in physical activity

2. Develop community advocacy capacity to influence public policies creating an environment that supports healthy nutrition and physical activity healthy behaviors
3. Provide a replicable community empowerment model that can be disseminated through similar low resource, rural, African American HFH communities

Conceptual Framework for Program: Operationalizing the ecological Model and CBPR to Address Obesity in Chestnut Oaks.

The ecological model (Figure 1) addresses the unique needs for populations dealing with several types of disparities, such as rural low-income Black and Latino populations. The use of the ecological model looks at individuals in the context of their families, communities, cultures, and within the larger social and political environment.

The political environment plays a role in overweight and obesity for the individual by setting and enforcing policies that affect individual choices. Policies make it possible to regulate children’s choices within a

Figure 1 Ecological Model



<http://www.balancedweightmanagement.com/> 1

public domain, such as in schools and community centers (26). Children spend most of their time in schools and at home. Not regulating adequate PE time in school, school nutrition, or city build environment such as sidewalks, trails, and parks that are equally distributed are all policies that directly affect the amount of physical activity and nutrition of school aged children. All these are environmental factors that are related to obesity that can be regulated by policies.

Within the social community domain, neighborhood SES plays a role in what activities are available for a child. In low SES neighborhoods it is common to see litter, physical decay, graffiti, which poses unsafe risks to children hindering physical activity, and these neighborhoods could also be unsafe due to violence (27). Middle to high SES neighborhoods have more pedestrian walkways, trails, playgrounds, more safety road signs and spatial area to encourage and help regulate pedestrian paths and physical activity choices (27). Media is also a major factor of influence on the individual. In 1997 close to 1 billion dollars was spent on advertisements for candy and snacks and only 333 million on healthy foods promotion (28). About 2 billion in that same year, was spent on marketing techniques such as premiums, contests, coupons, and billboards (28). More than 50% of commercials are related to high-fat, high energy, low nutrient foods (28). This leaves children who consume hours of TV persuaded to eat a low nutritious diet, which is linked to obesity (29). Green Acres will counterbalance this messaging through adopting the NC Eat Smart Move More individual campaign of 5-3-2-1- almost none (30). This saying refers to eating 5 servings of fruits or vegetables a day, 3 structured meals a day, 2 hours of screen time, including computer, tv, and games, 1 hour of physical activity and almost none of high sugar, high processed foods.

The organization domain includes jobs or organizations such as church and school which can potentially support or impede prevention of overweight and obesity. These domains can be modified to ensure that they are supportive of health goals. Work schedules make it difficult for adults to fit in physical activity, and once home; the adult may model inactive behavior by eating or watching TV (31,32). Families can be influenced by fast food restaurants, TV's and other social media sources to serve large food portions and eat out. The reason why TV and social media sources that encourage large food portion is an issue is because oversized food portions are risk indicators which increases energy intake and over time will cause weight gain if not physically active (31). More than 2 hours of TV watching in the house is linked to obesity and overweight (31). There are often a lack of access to fresh

quality fruit and vegetables in rural low-income areas (29). In many cases the cost of fruit and vegetables are too high to be a regular part of the diet or there is not adequate access to fresh fruits and vegetables (29). There is also evidence that disadvantaged groups are living in environments that encourage obesity with dangerous traffic or safety being an issue (33).

The interpersonal domain can include influences from family and social networks. There are several risk indicators within the family domain such as the family's SES that are linked to obesity (31). The amount of family income is a risk indicator for low to poor SES families and childhood obesity (32,34). Family income often dictates what foods are affordable and the quantity of those foods. Low SES families are linked with low consumption of fruits and vegetables, which in turn makes overweight and obesity a higher risk for these individuals. Family health status also matters. Maternal obesity is a risk indicator independent of other demographic and socioeconomic factors for a child.(25) Children as young as 3-5 years are shown to prefer high-fat, high-sugary foods and avoid bitter or sour tastes when in households with at least one parent being obese (32). Additionally, there are social dynamics through family or social networks that may influence perception of overweight or obesity (16). Green Acres' mission is to allow the Chestnut Oaks community to define the health issues (which has been identified through an oral health assessment) and does not focus on overweight or obesity as the focus of the project, but rather on health and wellness of individuals. This health and wellness focus includes addressing different determinants of overweight and obesity as it relates to physical activity and access to fruits and vegetables. Additionally, Green Acres will help build organizational advocacy capacity in the community (public policy) to advocate for specific built environmental needs that will facilitate exercise.

The last level covered is the individual, who is left to make choices based on his/her environment. A family's SES determines where a child lives. The work schedule of the parent influences the parent's

physical activity and nutrition choices, which in turns, influences the child. Already this child, if of a low-income SES, is in a family where there is limited physical activity and nutritional healthy choices and is encouraged to become obese by these factors. More than likely, a low-income family is in low-income neighborhoods, which there is likely limited places for play and/or are unsafe areas. The lack of supportive built environment and limited access to physical activity is a reason for adolescents not to be active. Combine this with media ads on television encouraging snacking and high-energy foods with little nutritional value, and cheaper prices than fruits and vegetables, you have a recipe for obesity.

Unfortunately this is the plight of many racial and ethnic groups who historically have been low-income earners or poor within the US, such as African Americans and Latinos (34). The majority of African Americans and Latinos are living in poor neighborhoods without access to a built environment that encourages physical activity and has the highest prevalence of adolescent obesity (4). Green Acres is choosing to provide an intervention within a rural low-income majority African American and Latino community and use the ecological framework. Now that an effective framework has been identified to address some complexities of rural low-income African American and Latino communities, we will describe how Chestnut Oaks will be engaged through the community based participatory methods.

Community-based Participatory Research. In 1997, the IOM recognized that the community was an important element in the health of individuals. There is evidence that supports this review, and therefore the community should be considered along with the individual. The ecological model addresses this. However, researchers have imposed research questions and programs on communities and individuals with the false hope of knowing how to engage the complex social and economic factors. Rather than impose a research model, CBPR invites the community to take an active role in all stages of the research process to capture the important aspects that will draw the community to the table, engage them, and continue addressing the needs of the community. Thus, Green Acres recognizes that if this rural low-income community, Chestnut Oaks, of majority African American and Latino heritage is

to improve obesity and overweight rates, then this community has to have an active role in defining the health issues, the activities of the program, and the implementation for the program to optimize its success and address the multifactors of obesity and overweight, which includes advocacy. Below are the 8 commonly cited guiding principles of CBPR with the aim(s) of Green Acres that reflects the principle in the program plan:

1. Recognizes community as a unit of identity; **Aim 1 and Aim 2**
2. Builds on strengths and resources within the community; **Aim 1 and Aim 2**
3. Facilitates collaborative partnerships in all phases of the research; **Aim 1 and Aim 2**
4. Integrates knowledge and action for mutual benefit of all partners; **Aim 1 and Aim 2**
5. Promotes a co-learning and empowering process that attends to social inequalities; **Aim 2**
6. Involves a cyclical and iterative process; **Aim 1 and Aim 2**
7. Addresses health from both positive and ecological perspectives; **ecological model, Program Framework**
8. Disseminates findings and knowledge gained to all partners; **Aim 3**

Although the research on CBPR is still developing, it is recognized through 10 years of research that these principles take time and patience to develop within a community (23). Additional benefits of using CBPR include scientifically sound research that uses culturally appropriate tools and are user friendly, and builds greater trust and respect between researchers and community. These guiding principles are not to be imposed on any program, but rather used as a guide for CBPR. Each of these principles is reflected in the design of Green Acres, but is not enforced nor pushed on Chestnut Oaks. The homeowners have a direct say in developing a health and wellness intervention for their neighborhood, develop program activities, engagement plans of stakeholders, and basically, all parts of the process. The Green Acres researchers affiliated with academic institutions offer institutional resources that otherwise might go un-accessed or unknown. The community partners offer dissemination opportunities and other resources to help leverage available resources to this community. CBPR tool offers a method to bring everyone together to recognize that everyone holds an important part of the success of the Green Acres health and wellness project in Chestnut Oaks.

Program Plan. Green Acres will operationalize the ecological model and CBPR through Green Acres' program plan. Green Acres is providing an intervention for both children and adults within a rural low income majority African American and Latino community called Chestnut Oaks. The academic researcher named the project Green Acres, which is the model that describes all parts of the project: garden, advocacy skill building, ecological model, and CBPR. Members of Chestnut Oaks have identified some key health issues to target: physical activity and fruit and vegetable consumption, activities for the program (detailed below); and have formed a club called, the 'garden club'. The activities of Green Acres are expected to be attended by at least 10 – 20% (4-8 homeowner representatives) of the community and expect to get as many as >90% (31-34 homeowner representatives) of the community. We expect this minimum attendance rate because of the high desire to have a community garden, the previous turn-out to meetings to do the health assessment and subsequent activities to program plan. We expect to get >90% because of the type of engagement activities that are likely to be of interest to everyone in the community which includes block parties, barbecues, and other fun gatherings coupled with the benefits of free produce from the garden. Adding to this success, the social cognitive theory helps explain how recruitment of other members in the community can be attained by commending and praising the behavior that is desired from the active participants during public forums and community dissemination materials. We also think that as individuals become more empowered they will take on more responsibility. Therefore, empowering homeowners is not only a desired outcome of the project but also a tool for participants to feel comfortable to actively participate, and their behavior will attract others. We expect to engage and form a foundation group of 6 people which includes at least 2 members of the HOA board and four other members of the garden club. These people have already been active in meetings and have agreed to be active members. Attrition of these members and others that subsequently join are thought to be low, perhaps 5% -10% (2 – 4 people), because Green Acres is located in the neighborhood, people are able to identify and choose their personal improvements,

people want the project and high quality fruit and vegetable accessible; beyond these characteristics that make this project successful, people in Chestnut Oaks have expressed a strong desire to get to know their neighbors, an opportunity for people to work together, and to beautify the community.

Specific Aims

Aim 1. Improve knowledge, attitudes, and skills regarding fruit and vegetable production and consumption, and increase in physical activity

This aim will be achieved through monthly meetings held at the beginning of the month, determined by the garden club. The HOA and garden club members will be involved with setting the agendas. The garden topics will be identified by garden experts but generally will range from 1) what plants to plant; 2) when does the season start; 3) what needs to be done to prepare for the planting, and; 4) distribution of tasks. A feedback loop will be formed of any one who wants to join for Green Acres and the HOA to make changes to the program as people need. Attitudes surrounding fruit and vegetable consumption and physical activity on the individual and interpersonal level will be addressed through the community members gardening both usual and unusual edible plants. The schedule of garden activities will be handled by one of the adult committees called the garden experts. The seasonal garden and its subsequent plants will be determined by the members of the community, aided by the garden expert committee. The garden experts will list in a calendar format what needs to be done to meet the season's growing cycle of plants. Individual and interpersonal levels will be engaged through the listing of individual assets that are able to be accessed to help the success of Green Acres and forming different committees to help manage the different components of Green Acres. Also, individual and interpersonal levels will be engaged by allowing space for community members to talk.

Aim 2. Develop community advocacy capacity to influence public policies that affect quality of community life related to the ability to practice healthy behaviors

This aim will be achieved through the community members accessing skill building workshops through Habitat for Humanity and the project manager of Green Acres finding free resources online. Habitat for Humanity offers skill building workshops periodically for all homeowners to access. Additionally, the community liaison for Chestnut Oaks works closely with the Home Owner's Association to acquire needed skills to be a success. This partnership could be aimed to help motivate advocacy in the community. The project manager for Green Acres will collect several different free online leadership tutorials relating to advocacy and make them accessible to the community members through the monthly meetings. The project manager will prepare a skill, based on an identified interest of the community, to help build on during the meeting. The community as a whole will research the steps that need to be taken to acquire a speed bump for the community. From there, the project manager of Green Acres will suggest a smaller committee to be formed to help delegate responsibilities and to work closely with the town ordinances to fulfill the need of the community to get a speed bump. The different committees will help keep the community informed of progress of all the different aspects during the general comments section of the monthly meetings.

Aim 3. Provide a replicable community empowerment model that can be disseminated through similar low resource, rural, African American HFH communities

Green Acres working along with the community will have several types of ways of reporting and collecting the lessons learned and evaluations. A process evaluation will be performed from the initial canvassing of the community to the first official meeting in which the Home Owner's Association was inducted. Next, Green Acres and the HOA will engage both adults and children on the successes of the process and challenges of the process. Following, Green Acres and the HOA will survey the community participants in what brought them to the meetings, what kept them engaged, what they liked about the meetings, what they didn't like, and their recommendations going forward. These reports and evaluations will be handed to Habitat for Humanity for their review. The expectation is that these

reports can be brought before other members of different Habitat for Humanity communities to determine if they could apply to their neighborhood, to start a Green Acres project there. The Habitat for Humanity liaison is connected to 7 different Habitat for Humanity communities that span within Orange County. These communities will be targeted first. Following, these communities have the potential to become a part of a larger evaluation of how Green Acres is able to address overweight and obesity through this model in rural, low income majority African American and Latino communities within Habitat for Humanity.

Targeted Community

Chestnut Oaks' Community Needs/Assets

The Green Acres Project will take place in Chestnut Oaks community, located in Chapel Hill; Orange County, NC. Despite the negative components to the neighborhood, Green Acres is leveraging the desires of the community to meet the community's expressed needs and the goals of Green Acres for success. For example, many people in the community desire a garden to offset high costs of fruits and vegetables, but they do not have enough sunlight on their property or lack the organization capacity to help start a garden; also, the community highly desires a speed bump for road safety; and, lastly, Green Acres is helping to acquire skills the community wants to use beyond the program activities. Already, through a community interest and community planning of Green Acres, two important things have happened. A diverse Home Owner's Association has started, which Habitat for Humanity could not get to form for over 6 years, and a garden plan was developed. Green Acres has been able to leverage the already existing interest of the community to come together around a community garden. Those initial interests have brought homeowners to several different meetings on varying days of all ages. What follows is a description of what has impacted the community over the years. This community is beset with a variety of challenges relating to low resource base and rural location. There is a high need to

increase physical activity and fruit and vegetable consumption within this rural low-income majority African American and Latino neighborhood. There is also a need from the homeowner to build social capital and to get to know the other neighbors. This neighborhood is struck by several barriers. For example, there are no sidewalks within Chestnut Oaks and people often walk on the road. The road is state owned. People driving often are going over 40 miles per hour without obeying the 30 mph speed limit, making it dangerous for children to play. There are loose dogs that wander and reports of these dogs chasing/biting children and adults. These two factors make it less likely for people to walk in the neighborhood for exercise.

The school aged children in Chestnut Oaks ages 5-19 are within the rural Orange County School District. Generally, county funds are less than city funds to support nutrition and physical activity curricula and programs within the school system, which is the case with the two school systems within Orange County: Orange County School System and Chapel Hill/Carrboro School System (35). The 34 homeowners within the neighborhood are racially diverse; 1 Asian American, 9 Latino American, 2 Multi-heritage, 19 African American, and 1 European American. The neighborhood has been pressured from Habitat for Humanity to start a Homeowner's Association or they will be forced to hire an outside management system that the homeowner's will have to pay for. Although this was a threat for over 2 years by Habitat for Humanity, the community still failed to form a HOA due to low attendance of meetings and the distrust of HOA of the revenues collected from homeowners. There has been little participation with attending traditional meetings (where people perceived it as boring and at inconvenient hours) and starting a homeowner's association. Many of the meetings were held in the community shelter which does not have a heating or cooling system. This made the environment for the duration of the meeting uncomfortable. Also, the meetings were scheduled during hours when people could not attend. And lastly, the meetings were announced through putting flyers on mailboxes which often flew off, did not make it to the homeowner, or there was some other delay in

communication of meetings. In the past 4 years there has been 1 homicide, 1 suicide, and several reports of gunshot sounds. In the entire history of the Chestnut Oaks community there are allegations of rapes, thefts, vandalism, and other social misconducts. Transportation is needed to get anywhere outside of the neighborhood, (e.g. the closest convenience store is 3 miles through back-country roads, and the closest grocery store is 5 miles on highway). The closest bus system that links Chestnut Oaks to the town limits of Chapel Hill is 5 miles away. Many people within the neighborhood lack transportation, or have difficulty affording the cost of gas.

In spite of the needs of the community, there are several positive sides that would make Green Acres in Chestnut Oaks a success. The good will in the community is what holds it together. Several families volunteer to keep the community grass mowed, the community welcome sign kept up (recently broken), and litter collected. Recycling is not required in this neighborhood, but several families participate in the rural Orange County recycling program voluntarily. This volunteer behavior can perhaps be an indicator to an interest in community participation. The great successes come with four families spear-heading a community-watch team which reports suspicious cars and activity to the police. There are other acts of good will that include neighbors helping each other with food, transportation, borrowing of lawn mowers, car repair, financial help, childcare, amidst many other good will acts. You can often hear music being played in several houses. Celebration and potlucks are means to get large turn-outs for community events. Having families rotate planning and organizing events will be one way of engaging these families. Another beneficial aspect is that many homeowners' are siblings or children of other homeowners within the neighborhood. This makes it easy to communicate and disseminate information throughout the neighborhood. Lastly, several families currently grow fruits or vegetables on their property, making it plausible that participation would be high for the community garden. Several of the families currently adapt some type of healthy activity. Adults walk on the road throughout the year and you can hear children playing in the woods. The community has roughly 100 acres that was donated

to the community that was planned to be turned into a baseball field, playground, walking trails, tennis courts, but has never been fully developed due to lack of funds and resources of the homeowners to build it. There is land already cleared by the community shed that could hold .5 acres of a garden (at least), with great potential to expand the garden. Health is a priority for many families, as seen with the interest in walking and gardens, but many homeowners face other barriers such as access to fruits and vegetables and spaces for children ages 2-19 to safely attain physical activity. Many families in Chestnut Oaks are knowledgeable about gardening and have basic equipment such as hoes, shovels, and plows, and would be in-kind resources to Green Acres. This garden knowledge and tool resource makes the sustainability and popularity of the garden realistic. North Carolina has very fertile land to use as gardening (36), in fact agriculture is #1 as an economic commodity in NC (36), and would prove to be very advantageous for the community. There is potential to expand this model to other Habitat for Humanity building sites. In summary, homeowner's present interest in gardening, the desire for health, the land tenure, knowledge of gardening and garden tools, and neighborhood beautification all support the success of Green Acres in Chestnut Oaks. Further, the inclusion of the ecological model and the use of CBPR offer potential for a larger impact to reduce overweight and obesity among this population than what current interventions have offered. Learning from the limitations of current interventions, Green Acres uses the ecological model and CBPR as a part of planning the activities (logic model) and setting the aims of Green Acres to leverage local, state, and national resources. The use of the ecological model is to expand the potential impact on rural low-income African American and Latino populations in the Southeast.

Evaluation and Dissemination. There will be two evaluations: process evaluation and impact evaluation. Broad data collection and monitoring will be conducted through surveys, interviews, self-sign-in attendance records and other methods for a **process evaluation**. Through these methods we will collect process data on the start-up phase, Chestnut Oaks outreach, attendance to meetings, records of

potlucks, planting, harvests, increasing social capital efforts, participation rates, generated skill building workshops, sustainability efforts, organizational capacity efforts, and lessons learned. The program's goals and objectives are geared to plan, implement, and manage a community garden in Chestnut Oaks. Green Acres will be planned in a way that increases skills within the community, increases social capital, provides environmental and economic sustainability, and creates an on-going dissemination partnership with HFH and other stakeholders through website and other means. All of these parts of the implementation stages will be monitored for evaluation purposes, in order to generate lessons learned and understand a sense of the impact in the community.

The second part of the evaluation is an **impact evaluation** which will measure the impact of the program on Chestnut Oaks community. Although there are other HFH communities, they are structured differently, in different areas, with different resources, and do not provide a good enough control group at this point. If we were to group all the HFH communities in Orange County together, we would be able to use a similar district of HFH collective communities as a control group (e.g. Durham County), which we hope to do in the future.

Dose-Response impact evaluation. The most rigorous method of impact evaluation is not applicable in this situation. Randomizing communities at this point to start a Green Acres program and another group to serve as the control group is not feasible nor is it desired. There are also potential ethical issues to address when targeting rural low-income majority African American and Latino communities, i.e. if this intervention works then we could not with-hold it from other groups. This is a pilot program which will serve the purpose of proving the concept of Green Acres model serving the needs of rural low-income majority African American and Latino populations in the Southeast within a HFH community. A way to measure the impact is to do a pre post test measure; however, this method does not capture how often someone accesses the activities of the program or how involved they are in the process. A dose-

response is able to use the monitoring data of participation rates to measure the benefits of Green Acres. A pre post survey/questionnaire of desired outcomes will be given to community members at the beginning (or when they start, if they start after the beginning) and then again at the end.

The impact evaluation will ask all participants and all homeowners of their participation and relate it to the desired outcomes. The pre post measures will be taken at 6 time intervals to correlate with the large group gatherings. This will allow people to join at various points and still be able to receive ample data to make more detailed conclusions. Also, the CBPR principles take time and effort to be established, for this reason; each measure is timed 3 months from the last, in order to adjust for the technique to be used properly, harvest to come in, people to eat the produce, and for the cycles to repeat.

Time 1 –month 1 (beginning)

Time 2—month 3

Time 3—month 6

Time 4—month 9

Time 5—month 12

Time 6—month 15, follow-up

The questions that will be assessed are the following:

The first set of questions is regarding fruit and vegetable consumption:

- 1) Did participants consume more fruits and vegetables as a result of the garden?
- 2) Were participants more likely to enjoy the fruit and vegetables they grew as compared to other vegetables?

Measurement: Through interviews and validated questionnaires during the community events at each time interval.

The second set of questions is regarding physical activity:

- 1) Were participants more likely to go outside and engage in walking, bending, or some other form of physical activity as a result of the garden?
- 2) Did physical activity increase as a result of Green Acres advocacy skills application?

Measurement: Through interviews and validated questionnaires during the community events at each time interval.

The third set of questions is related to advocacy

- 1) Did participants learn new skills related to advocacy as a result of Green Acres?
- 2) Did participants have a place to practice those skills as a result of Green Acres?

Measurement: Through interviews and validated questionnaires during the community events at each time interval.

The fourth set of questions is related to dissemination

- 1) Did HFH review lessons learned, process evaluation report, or any other report?
- 2) Were any of the reports shared with other HFH communities?
- 3) Were other organizations, personnel, community groups given reports or data from Green Acres in Chestnut Oaks?

Measurement: The signed letter from HFH saying HFH regional CH office has reviewed the reports. The community log that details activities would have recorded who reports were given to with date, signature of recipient (when available), with contact person listed.

The fifth set of questions is related to social capital in Chestnut Oaks

- 1) Do the participants know at least one other neighbor, where they live, and contact information that they did not previously know?
- 2) Do the participants feel that members of the community worked together to implement Green Acres?
- 3) Do you perceive the neighborhood is more unified as a result of Green Acres?

Measurement: Through interviews and surveys during the community events at each time interval.

The sixth and last set of questions are related to empowerment

- 1) Have you acquired more skills than you previously had with the opportunity to apply them?
- 2) Did you participate in any self-reflection workshops, such as fighting against internalized racism or cultural competency with getting along with your neighbor?

Measurement: Through interviews and validated questionnaires during the community events at each time interval.

Data Collection. The data collection for these questions will come through an immediate pre measure with subsequent measures throughout the program to track progress. As of now, the best types of written tools to assess the questions are still being identified. We are searching for validated tools that serve English and Spanish speaking participants of all ages. Most of the data collection will rely on easy attainable measuring tools, e.g. food logs and interviews from participants, to assess these questions.

Many of the data collection methods are intertwined with Green Acres program activities. For example, there will be a garden club log/recipe book for members to list the vegetables they collected

and how they used the fruits and vegetables in recipes to give other's ideas. Additionally, the feedback loop that will be accessed during barbecues and other gatherings will be a way to collect these measures. The data collection times are connected to major gatherings to keep the overall community involved. Also, attendance logs are kept at every event to document the participation rates. The data collection methods include: 1) Surveys to get an idea of answers to specific questions regarding decision making process, communication needs/preferences, feedback on the process/implementation, and general information sought. 2) Interviews will serve the same purpose as surveys, but will be targeted to people who did not fill out a survey, or will be convenient interviews during the barbecues, potlucks, or other gatherings to get the same information from people who did not fill out a survey, or to get feedback on the next step 3) self-sign-in attendance records and other methods will document participation rates in various aspects as well as collect process information. 4) HFH will also evaluate program related to feasibility, acceptability, and achieved HFH goals for Chestnut Oaks. Further details of the process data collection will be outlined when future decisions from the members of Chestnut Oaks make them.

Measuring the success of Green Acres in Chestnut Oaks will be ultimately determined by the members of Chestnut Oaks. Members of Chestnut Oaks are highly concerned with getting to know their neighbor and working together throughout this process. Therefore success could be determined as:

- The extent Green Acres mobilized and encouraged members of Chestnut Oaks to increase social capital;
- The extent Green Acres encouraged environmental and economic sustainability, quality of garden produce, care of community grounds and health and wellness of the participants;

- The extent Green Acres involved dissemination, integration, and organization capacity of the ecological model and CBPR tool of the Green Acres project in Chestnut Oaks to HFH and other stakeholders

Dissemination. One of the many unique aspects about this community is that it is a Habitat for Humanity community. We believe that because of the networking possibilities through statewide HFH, this model can be disseminated to other Habitat for Humanity (HFH) communities. If shown to be successful, the program can be disseminated to other communities in Orange County, NC and then applied widely through the national HFH to its communities. There will be a general website that will document the process of Green Acres in Chestnut Oaks, pictures of events, any videos, reports, and other information relevant to the project. Other dissemination reports such as lessons learned, process evaluation and impact evaluation will be distributed internally to Chestnut Oaks and to surrounding HFH communities through the HFH liaison.

About Habitat for Humanity. Habitat for Humanity (HFH) started in 1976 by Linda and Millard Fuller. HFH is a non-profit organization that works internationally. The organization focus is to provide housing for families and individuals who otherwise would not qualify financially. The families that qualify for Habitat for Humanity are at most 60% of the Area Median Income. The Area Median Income of Orange County, NC, in 2008 was approximately \$55,522.(37) Habitat for Humanity's first community in rural Orange County, NC, was Chestnut Oaks. As a part of the 1998 Habitat for Humanity report produced by AREA, at the request of HUD, it was found that financial security was still an issue despite the lower than average mortgage payments and the screening Habitat for Humanity conducts on each applicant.

HFH is only able to buy land that is affordable and offer land when it is available. Habitat for Humanity is affected by land costs and other market instability. Because HFH looks to build as many houses as possible, most of their land chosen is within affordable districts, which often includes rural

areas away from high market values, which also has little access to local, state, and federal resources. The organization tries to increase resources and assets such as housing infrastructure, organizational support and advocacy and in some cases land tenure into these neighborhoods. However, there can be little built environment for physical activity, and housing security and land tenure often does not stop violence or other social misconduct prevalent in low income neighborhoods. These neighborhoods also do not change external infrastructure to access grocery stores, support services, and other needed items to secure social and economic viability. Green Acres proposes policy implications for HFH based on the success of the community garden implemented within on HFH community, Chestnut Oaks, in NC.

Engagement Plan. Green Acres will engage adults by going to house to house to form a base of interested people in the community garden. Next, Green Acres will have subsequent meetings, some potlucks, of these persons to collect contact information, deciding where to put the garden, what plants to plant, and asking them to bring their children, as well as asking the question of what would hinder the success. Following, Green Acres will suggest the formation of committees for these adults to assume some accountability and responsibility, which according to the social cognitive theory, people are more likely to be and stay engaged if they define what they are getting and define what they are able to give. An example of this is asking families who often have music playing from their homes to organize or co-organize the next gathering and to include music, dance, or other fun activities.

Green Acres will engage children by canvassing each house and requesting children and adolescents to come with their parents to the meetings to offer input and participate. At the beginning of the planning stages we expect the turn-out to be small from this population. This is because parents and adults are carrying the majority burden of health, purchasing of fruit and vegetable, and have a better sense of community unity than children. For these reasons, the adult attendance is expected to be high, the attendance of the younger age group is expected to be low. Those younger age groups who

do make it to the meetings will be asked specifically how they would like to participate in the garden planting and production, and what vegetables or fruits they want to be planted and harvested. During the on-going phases of the project, Green Acres will continue engage and recruit more youth by having them to help plan the music and dance activities of the gatherings, and to suggest ways of making the garden experience more fun. Every child might not plan each event, but if at least one or two are contributing their ideas, then they are likely to stay engaged and bring in other children and adolescents. There are many teens that enjoy building, as seen from their fixtures in the woods. Green Acres will leverage their interest and ask if these teens would be interested in donating their time to help build a fence around the garden. Additionally, during the barbecues and other gatherings that involve music, dance, and food, it is expected that this will bring children and their parents. During these events, the children will be recruited by asking them what skills they enjoy developing such as (music or dance) and to use these skills for the project; for example building skills (since many of the boys build forts in the woods), film skills (one of the girls enjoys filming), and other skills that the adolescents want to develop are ways to engage the youth, make the project more fun and enjoyable, and overall will augment the social capital of the Green Acres project. For adolescents who are not able to think of a skill to offer, they will be asked to join a group or to help oversee a part of the garden that needs care and support. Lastly, Green Acres will engage the older teens by asking if they will help disseminate information in the neighborhood or other activities they would be of interest to them.

Activities. Once engaged through CBPR methods, all participants are invited to help continue to plan and implement the garden. Green Acres will help facilitate needed skills and equipment to make the community's garden planning, management, and implementation a success. The engagement activities and the activities that are done after engagement relate to the conceptual model because of how the following levels are addressed:

Public Policy: Chestnut Oaks is working together to advocate for speed bumps (Policy Level) and decide on the rules of harvesting produce to the HOA.

Community: The community level is focused on the Chestnut Oaks community by forming relationships with outside organizations to strengthen the advocacy campaign to provide a more supportive built environment in Chestnut Oaks, such as speed bumps. The Chestnut Oaks community wants to provide individuals with support to make healthier choices by also posting the 5-3-2-1-almost none messaging within the community shelter and area around the garden.

Organization: the organization level (Habitat for Humanity) is supporting these choices by providing needed skills and resources for a successful garden. Additionally, the dissemination aim is involving other HFH communities to possibly adopt a Green Acres project for their community. Likewise, the community will do an outreach to other organizations that community members are connected to in order to expand the resources acquired for the Green Acres project in Chestnut Oaks, but also to help foster support within those organizations for the individuals. These other organizations include schools, churches, jobs, businesses, and others.

Interpersonal: the interpersonal level is being involved through forming committees in Chestnut Oaks such as the garden club, garden experts, HOA, and other networks within the community to build the social capital and resources within the community.

Individual: the individual has access to a garden with fruits and vegetables she/he will eat, can build skills that are used beyond the project, and is empowered to use the new resources to make healthier physical activity and nutrition choices.

Detailed Plans by Aims

Aim 1. Improve knowledge, attitudes, and skills regarding fruit and vegetable production and consumption, and increase in physical activity

Knowledge: The NC Eat Smart Move More 5-3-2-1-almost none messaging will become a part of the posted messages within the community shelter. The messaging will be a way to combat the media advertisements. This messaging coupled with posted materials from the First Lady's campaign is a way for people to connect with the First Lady's campaign, *Let's Move*, and enhance the motivation for people to be continually invested in the process. There are many supporters of the Obama's Administration within this community, and joining the national efforts is seen as a strong addition to keeping people engaged. Additionally, we will accomplish an increased knowledge of the many benefits of physical activity and fruit and vegetable consumption by holding monthly health education meetings (5 total from April –August). These gatherings are thought to be successful because a needs assessment showed an interest in the community in getting to know each other, having healthier options, and working together to achieve beautifying the neighborhood among moving forward with the garden, and these health education meetings is a way for people to achieve all of these objectives. The Chestnut Oaks suggested gatherings are expected to be successful with at least 10-20% participation. Members of Chestnut Oaks also identified that these gatherings should be in the form of a barbecue, block party, potlucks, and other community forums of interest to the community. The following topics are proposed to be discussed by the academic researchers: 1) Health theme chosen by participants related to health and wellness of physical activity and fruit and vegetable consumption 2) Fruit and vegetable consumption and the importance to health 3) Food distribution system and how it impacts health 4) Overweight and Obesity related diseases and 5) physical activity and the importance to health. The first health topic allows for the participants to choose a health theme that they are most concerned about or wish to explore related to physical activity and fruit and vegetable consumption, which CBPR suggests that this is an important step to principle 1 of recognizing the importance of the community (e.g.

implementing their topics of interests); principle 2, builds on strengths and resources within the community (e.g. through empowering individuals to take the lead on decision making); principle 3, facilitates collaborative partnerships in all phases of the research (by getting members involved); and principle 6, involves a cyclical and iterative process (e.g. allowing the community to decide if the health topics is an activity they want to incorporate within these gatherings or in a separate venue). The subsequent health topics were proposed by the academic researchers and approved by the community in order to highlight recent research surrounding physical activity, nutrition, and the food distribution system to dispel any myths about foods (e.g. myth that a high fat diet is not healthy {{366 Hu, F.B. 1997}}, and there is rigorous evidence to support a high fat diet can fight against obesity and its co-morbidities (38)(39) and to possibly incorporate the academic research into the activities as the program moves forward (e.g. leafy vegetables have been shown to reduce heart related diseases (40), and this knowledge might change the quantity and variety of leafy greens incorporated in the garden and can be cooked with fat (a traditional recipe of Southern African Americans). Another example of academic research being incorporated into the garden activities could be the academic research describing pesticide use as a prominent practice of industrial agriculture which is a large contributor to environmental degradation (41,42), is likely to end up in the food supply (43), and is connected to environmental social injustice predominantly in low-income African American and Latino neighborhoods (42); perhaps using biodynamic methods or organic farming methods would be alternatives to fertilizer and pesticide use the garden club in Chestnut Oaks can practice). Chestnut Oaks' members have identified four ways that can be effective to get people to come to the gatherings to talk about these issues mentioned above or to increase knowledge of these areas. The first is to have a potluck with a theme, e.g. Latino or Caribbean, to draw people to the meetings. The community is very welcoming, and it is thought that once people arrive people will feel comfortable to stay. One of the strengths in the community is food. There are celebrations of all sorts that happen in the community. We were able to

initiate the discussion of a garden by advertising a potluck meeting and 9 homeowners were present. The second is to personally talk with each house within the 34 unit housing development to ignite interest from house members to attend. We have thus far been able to get three houses to join the Chestnut Oaks garden club by this method. The third is to build on assets in the community by asking a few homeowners to share a skill or their ethnic background with others in the meeting at some point during the meeting. We have been able to involve many (6) homeowners who have expert knowledge in gardening through this method. The fourth is using the CBPR approach to survey the community members to find out what would bring them to meetings and keep them engaged throughout the process. All of these methods will be continued to be used throughout the program at various times. One of the co-facilitators of these meetings will be the president of the Home Owner's Association (HOA) of Chestnut Oaks, which was formed in order to move forward with the garden. This is a major plus in the eyes of HFH and some homeowners, who have all struggled to get a HOA in this community for at least the past 6 years. The other facilitator will depend on the topic of discussion. All members of Chestnut Oaks will be encouraged to offer their knowledge on any given topic related or unrelated to the garden, during appropriate times during the gathering events. This is to build social capital and to help empower individuals and to build organization capacity by highlighting the knowledge that the homeowners of Chestnut Oaks already possess.

Attitudes: The second part of Aim 1 is improving attitudes. We will improve the attitudes of fruit and vegetable consumption through the activities in the community garden. The community garden is planned, implemented, and maintained by the garden club, and any external person the garden club invites to help out. The garden club is a generic name that refers to anyone in the community that helps out in the garden. A member of the community is automatically added to the garden club just by showing up and working or agreeing to be a part of the club. The activity of planning what is planted and quantity is partly determined by academic research, such as leafy greens, but mainly, Chestnut Oaks

has decided what to grow based on what they want to harvest. There is evidence to suggest that participation in growing fruits and vegetables increases positive attitudes about fruit and vegetables (44). In particular, it offers a chance for attitudes towards unusual types of plants that have healthy benefits to be available for participants to eat.

Skills: The third part of Aim 1 is addressing the skills. The academic researcher of Green Acres suggested improving the skills of gardening and organizational capacity through engaging in three skill building activities, which was approved by the members of the garden club. The first is developing a mentor/mentee relationship with experts within the neighborhood (garden experts) to have mentees who are not as knowledgeable about gardening in the neighborhood, which builds on principle 2, building on strengths and resources within the community. We will form different committees to address the various needs of maintaining a garden. The second skill building activity is visiting other community gardens to learn what other communities are doing to build on principle 3, facilitates collaborative partnerships in all phases of the research and principle 4, integrates knowledge and action for mutual benefit of all partners. The third skill building is doing searches online, reading books on particular topics, and inviting external experts to come to Chestnut Oaks to build on administrative and other research skills related to the success of the garden. This type of skill building was identified by the community through a needs assessment to acquire organization skills for the purpose of helping to facilitate meetings for the garden club and HOA. These types of meetings will happen in the community shelter or in a member's home either during the large gatherings or at separate times, determined by the members who want a particular skill. These meetings are expected to have a smaller turnout of members because not everyone would want to learn or need to acquire the skill chosen. The HOA members are mostly interested in learning these skills. The HOA is newly formed, initially for the purpose of voting in the garden. The President of the HOA has expressed an interest in learning skills in order to be an effective president, but also to use in the job market. Other members of the garden club

have expressed an interest in learning skills that will help with the garden, and also has an external professional use. The advocacy skills will be geared towards the smaller group of individuals who are interested in advocacy. Besides the HOA members, we expect others to join the advocacy skill building through hearing about the skills taught from these members and hearing about the possibility of putting in a speed bump to control traffic, which is highly desired by many homeowners. Additionally, all produce that is grown is owned by the community. The members who participate in the garden can practice advocacy skills amongst the Home Owner's Association to decide the rules on how and when people will harvest. Green Acres will encourage the garden club to propose the rules surrounding the harvest to the HOA and disseminate the proposal to all homeowners at the beginning of the project. This will help encourage other members to join and for everyone to be clear how the harvesting will operate to lower potential for any conflicts, wasting of produce, or any other ill management.

Aim 2. Develop community advocacy capacity to influence public policies that affect quality of community life related to the ability to practice healthy behaviors

This aim relates to the ecological public policy level of policy supporting community and individual health as well as the CBPR by including advocacy to complete the iterative cyclical process of engaging the community. If poor resource communities can gain skills and empowerment to advocate for better resources, then mobilization to attain these resources could be less fragmented. This community has stated through a community assessment that speed bumps are desired to control traffic. Traffic inhibits walkers and children from accessing a safe place to walk, run, or play. We will accomplish community advocacy capacity by starting with the HOA Garden Board. We will hold meetings to become familiar with the bylaws of the community, and hold workshops on particular leadership skills they will use to be successful leaders on the board. The newly elected HOA is excited to take on the responsibilities to get a garden started in the community. It is expected that the HOA will meet outside of the 6 scheduled community gatherings to learn the bylaws and acquire skills to effectively run the HOA. There are four

HOA board members, which makes it easier to schedule meetings and they are more flexible with where to meet. Meetings can be held in local restaurants (carpooling with each other), in houses, or at the Habitat for Humanity building. These meetings will be open to the community at large to also learn these skills if desired. A schedule of these meetings detailing the place, skills addressed, and location of meeting will be offered to each homeowner. Overall, the skill building meetings are desired by the community because they are useful outside of the activities of the program. Several homeowners are looking to acquire job skills to be more marketable during job searches. The desire for the community to use these skills outside of the community, for their personal and professional use, increases the success of people coming to these meetings. This interest highlights principle 5, promotes co-learning and empowering process that attends to social inequalities, since low-income individuals often lack education to compete for competitive paying jobs (45).

Aim 3. Provide a replicable community empowerment model that can be disseminated through similar low resource, rural, African American HFH communities

We will accomplish a dissemination of the community empowerment model to other HFH communities through working with a HFH liaison who also serves 6 other HFH communities. The liaison is the key advocate of introducing this model to these other communities. The liaison is a part of the planning and implementation process of Green Acres in Chestnut Oaks. Also, the liaison helps to link external community skill resources to the community. Additionally, the liaison has contact information of all the homeowners in Chestnut Oaks, and distributes flyers, notices, and other information to homeowners. This dissemination system could be accessed to disseminate all reports to the homeowners within the community. Aim 3 illustrates the application of principle 8, disseminates findings and knowledge gained to all partners.

Summary. If Green Acres is a success then it will address some factors that relate to overweight and obesity for this population of rural, low income majority African American and Latino population. (1) It

will change the environment to support peoples' ability to walk and play outside, (2) It will create a garden which not only provides physical exercise for some members, but also a source of fresh veggies for the community (3) It will improve the knowledge base so people can make healthy choices. Green Acres will provide a resource to access quality, diverse fruits and vegetables for health and wellness. It will also make physical activity a viable choice within a neighborhood which has struggled with traffic control. Additionally, if this program is a success there are policy implications for Habitat for Humanity. There is a high potential for infrastructure change on the Habitat for Humanity organization level to expand the impact on overweight and obesity within this population. HFH has the ability to leverage their donor support to gain access to more resources for these resource poor areas. By supporting and utilizing Green Acres in Chestnut Oaks, Habitat for Humanity could have a model to further pilot on a larger group of communities to test the effectiveness of adopting gardens as a part of their home building mission domestically to connect with the Healthy People 2010 and 2020 goals. Habitat for Humanity has been frustrated that building homes is not seen as a health objective of major groups. Green Acres in Chestnut Oaks has an opportunity to come together to form a community garden that is beneficial to Habitat for Humanity, the community's needs, the local chapter's desire for the community to start a Homeowner's Association, and a way to help the nation meet the Healthy People 2010 objectives in reducing obesity. Habitat for Humanity has already connected to energy efficient model homes by testing different materials within subunits, and this could be another area for consideration, to build community gardens to connect to national and global health goals.

On a local rural level, Chestnut Oaks has an opportunity to mobilize families and individuals within Chestnut Oaks to become advocates to join a local Wellness Council within the rural Orange County School system which every school system that accepts the Federal Lunch Program is required to form. The Wellness Council is intended to change physical activity and fruit and vegetable policy within school systems.

HFH has a highly respected and well known international organization. HFH has a potential opportunity to directly infuse their housing mission within the global MDG and the US Healthy People 2020 goals by directly including gardening as a part of their housing mission. Green Acres is a potential pilot project to start the initial testing of community gardening within resource poor communities. Using the ecological model as Green Acre's program framework and applying the CBPR principles to guide program's activities can address the multifactorial causes of overweight and obesity, engage community members, and optimize building capacity within the community beyond the intervention (16,23).

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