

Knox County Health Department

Community Garden

Health Impact Assessment

Recommendations for Lonsdale, Inskip and Mascot

Compiled by: Albert Iannacone and Sarah Harder

Acknowledgments

The Health Impact Assessment Team at Knox County Health Department would like to thank NACCHO for the funding and technical support we were afforded in the creation of this Health Impact Assessment. Our mentor, Johnnie Hyde, brought significant experience to our project and has been extremely helpful throughout the entire process of creating this HIA. Knox County Health Department will continue to build on the experience we gained through this effort as we endeavor to make health impact assessments a significant consideration in policies, programs and projects implemented throughout our region.

Introduction

Health Impact Assessment

A health impact assessment (HIA) is commonly defined as “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (1).

An HIA is used to evaluate the potential health effects of a project or policy before it is built or implemented. An HIA can provide recommendations to increase positive health outcomes and minimize adverse health outcomes. The HIA framework is used to incorporate public health impacts into the decision-making process for plans, projects, and policies that fall outside of traditional public health arenas.

The major steps in conducting an HIA include

- Screening (identify projects or policies for which an HIA would be useful),
- Scoping (identify which health effects to consider),
- Assessing risks and benefits (identify which people may be affected and how they may be affected),
- Developing recommendations (suggest changes to proposals to promote positive or mitigate adverse health effects),
- Reporting (present the results to decision-makers), and
- Evaluating (determine the affect of the HIA on the decision).

The HIA process should be utilized on a continuing basis as a tool to document specific circumstances justifying community gardens as additional neighborhoods are identified that would benefit from them. The HIA should document need, obstacles, opportunities and benefits to aid decision makers and community members in embarking on a community garden program in an informed manner.

Knox County Health Department (KCHD) HIA on Community Gardens

The purpose of this HIA is to inform policy decisions related to the placement and maintenance of community gardens in Knox County Tennessee. The HIA will help educate those that will be making these decisions, as well as explain why one community may be suited for a garden and another may not. The major policy that can affect the placement of community gardens is zoning; not all zoning codes will support the placement of a garden, especially within city limits. The goal of the HIA would be to objectively present the facts surrounding community gardens and why zoning code should be changed if needed in order to support their placement within residential and nonresidential communities.

History of Community Gardens

There is a long history of the use of community gardens to improve psychological well being and social relations, to facilitate healing and to increase supplies of fresh foods (Armstrong 2000). During and after both World Wars, community gardens provided increased food supplies which required minimal transporting. During the Great Depression, lands were made available to the unemployed and impoverished by the Work Projects Administration (WPA); nearly 5,000 gardens on 700 acres were cultivated in New York City through this program (Hynes 1996). During WWII, the U.S. Department of Agriculture reported that national health, as well as personal well-being was dependent on the consumption of fresh vegetables, which led to the Victory Gardens Program and the production of approximately 40% of the fresh vegetables consumed in the U.S. from an estimated 20 million gardens (Murphy 1991).

Demographics

Knox County

Knox County is the largest county in East Tennessee and the third largest statewide with a population of more than 400,000. Children three to 18 years of age make up approximately 16.8% of the Knox County population. The county's population is approximately 88% white, 9% black, 2% Hispanic or Latino and less than 2% Asian. Although median household income is \$41,618, 14.5% of families with children under 18 years of age, 40.7% of families with female householder (no husband present), and 15.3% of persons under 18 years of age live below the poverty level. (U.S. Census 2006 estimates)

According to the 2008 Knox County Body Mass Index (BMI) Surveillance Study, an ongoing surveillance system conducted jointly by the Knox County Health Department (KCHD) and Knox County Schools (KC Schools), four out of 10 Knox County School students are either overweight or obese. The overall prevalence of obesity among students in KC Schools is 21.9%, considerably higher than the national prevalence rates reported by the most recent NHANES data, which showed that for children aged 6-11 years and 12-19 years, the prevalence of obesity was 17.0% and 17.6%, respectively.

Overweight and obesity in KC Schools is more than eight times the target prevalence of 5% set in Healthy People 2010.

Lonsdale, Inskip and Mascot

Lonsdale, in urban Knoxville, has median income of \$25,128 - the lowest in the county. 95% of the 250 students at Lonsdale Elementary are economically disadvantaged; 51.8% are overweight/obese. Challenges in Lonsdale include vacant lots, blight, and dilapidated buildings. The Metropolitan Planning Commission (MPC) noted the area has only 3 acres of parks per 1,000 residents, half the recommended level. Convenience stores in Lonsdale offer mostly food of low nutritional value. A major grocery store has opened within two miles, but few sidewalks and truck traffic hinder travel by foot or bicycle. Buses run only every half hour in daylight hours during the week, and less often on weekends. Assets in Lonsdale include that it is located within an Empowerment Zone and is targeted for redevelopment and renewal. There is an elementary school and a recreation center in Lonsdale. A community farm, staffed by AmeriCorps volunteers, is nearby. A neighborhood committee is working to improve healthy recreation opportunities in Lonsdale.

Inskip is a suburban community in northern Knoxville. 95% of children at Inskip's public elementary school are economically disadvantaged; 45.7% are overweight/obese. Inskip has a mix of modest and well-maintained early 1920's homes, public housing, low-income apartments, and light industrial/warehouse property. MPC determined there is a 71-acre deficit of parks in the area. Convenience stores operate near Inskip's elementary school. There is a large grocery store in the community, but motor vehicle traffic and lack of sidewalks limit pedestrian or bicycle access.

Mascot, in rural East Knox County, has low-density residential areas and mobile home parks, farmland and some industry. 71.5% of the children who attend East Knox County Elementary are economically disadvantaged; 53.4% are overweight/obese. Roads in the area are hazardous to pedestrians or bicycle riders, due to lack of shoulders and open storm water culverts on one or both sides. Recreation opportunities exist at nearby parks, but they can only be safely reached by car. Food options are limited to three convenience stores; the nearest large grocery store is five miles away. However, the farming heritage in this area presents potential opportunity for both farmers and consumers.

The Consequences of the Being Overweight or Obese

Health Consequences

Overweight is defined as a body mass index of 25 or higher; obesity is defined as a BMI of 30 or higher. Research has shown that being overweight or obese puts you at risk for the following conditions (5):

- Coronary heart disease
- Type 2 diabetes
- Cancers (endometrial, breast, and colon)
- Hypertension (high blood pressure)
- Dyslipidemia (for example, high total cholesterol or high levels of triglycerides)
- Stroke
- Gallbladder disease
- Osteoarthritis (a degeneration of cartilage and its underlying bone within a joint)
- Gynecological problems (abnormal menses, infertility)

Less common health conditions associated with increased weight include asthma, hepatic steatosis (fatty liver disease), and sleep apnea.

Obese children and adolescents are at risk for health problems during their youth and as adults. During their youth, obese children and adolescents are more likely to have risk factors associated with cardiovascular disease (such as high blood pressure, high cholesterol, and Type 2 diabetes) than are other children and adolescents.

Obese children and adolescents are more likely to become obese as adults. One study found that approximately 80% of children who were overweight at aged 10–15 years were obese adults at age 25 years. Another study found that 25% of obese adults were overweight as children. The latter study also found that if overweight begins before 8 years of age, obesity in adulthood is likely to be more severe (7).

Some consequences of childhood and adolescent obesity are psychosocial. Obese children and adolescents are targets of early and systematic social discrimination. The psychological stress of social stigmatization can cause low self-esteem which, in turn, can hinder academic and social functioning, and persist into adulthood (8).

Economic Consequences

Along with health consequences, overweight and obesity also have severe economic consequences on the U.S. health care system. A recent study focused on state-level estimates of total, Medicare and Medicaid obesity attributable medical expenditures (Finkelstein, Fiebelkorn, and Wang, 2004). Researchers used the 1998 MEPS linked to the 1996 and 1997 NHIS, and three years of data (1998–2000) from the Behavioral Risk Factor Surveillance System (BRFSS) to predict annual state-level estimates of medical expenditures attributable to obesity (BMI greater than 30). The estimated percentage of total, Medicare, and Medicaid adult medical expenses that are attributable to obesity in Tennessee are (6):

| State | Total Population % | Millions \$ | Medicare Population % | Millions \$ | Medicaid Population % | Millions \$ |
|-----------|--------------------|-------------|-----------------------|-------------|-----------------------|-------------|
| Tennessee | 6.4 | \$1840 | 7.6 | \$433 | 10.5 | \$488 |

Clearly, obesity is an enormous cost to our society, and specifically to Tennessee. In 2009, Tennessee was ranked 47th in the nation in health status. This is largely due to the high percentage of Tennesseans that are overweight or obese. Being ranked 47th in health status means Tennessee is spending much more money on health care than forty-six other states.

Link Between BMI and Socioeconomic Status (SES)

It is well documented that people with low SES typically have a high BMI and thus are more often overweight or obese. Researchers have found that, in adults, low SES is consistently related to higher body mass index (BMI) in adult women (Wardle et al., 2004) and somewhat consistently related to higher BMI in adult men (Garn et al., 1977; Millar & Wigle, 1986). In children the relationship between SES and BMI is less clear (da Veiga, da Cunha, & Sichieri, 2004; Garn, Hopkins, & Ryan, 1981; Hernandez et al., 1999)

Expected Outcomes Related to Community Gardens

Increased Access to Healthy Food

Many aspects of the physical environment that influence health are created, managed, and maintained by local governments. For example, local policies and incentives can affect the presence and absence of parks, sidewalks, bike lanes, mixed-use development, healthy food retailers, and farmers markets. Likewise, zoning code can determine whether or not a garden can be placed in a community, thus limiting or increasing resident's access to healthy foods. People make food choices based not only on personal preference but on environmental factors including food access, availability, and affordability. Food access refers to people's ability to reach local food retail outlets by using convenient modes of transportation. Some research has drawn distinctions between "potential access" where consumers could shop and "realized access" where consumers actually shop (5). Food availability refers to what healthful foods and beverages are sold or served at retail food outlets. Food affordability refers to the idea that low-income people must choose foods based on their price, not just relative to other foods but relative to competing necessities, such as housing, clothing, and transportation (6). Food justice is the concept that everyone deserves healthful food and that the benefits and risks associated with food should be shared fairly (7). Not only would community gardens increase food access, they would also increase food affordability, food availability and food justice.

In all three of the pilot communities (Lonsdale, Inskip and Mascot) the food availability, affordability and food justice is very low. The closest grocery store may be over three miles away, and many of the local gas stations have little to no produce. If community

gardens are placed within these communities, they would increase the availability for purchase and consumption of healthy foods and produce.

Increasing consumption of fruits and vegetables and whole grains has many benefits. Fruits and vegetables contain essential vitamins, minerals, and fiber that may help protect against chronic diseases. Compared with people who consume a diet with only small amounts of fruits and vegetables, those who eat more generous amounts as part of a healthful diet are likely to have reduced risk of chronic diseases, including stroke and perhaps other cardiovascular diseases, and certain cancers (2). Fruits and vegetables can also reduce the risk of obesity because they are part of a well-balanced and healthy diet. There are many different ways to lose weight or maintain a healthy weight. Using more fruits and vegetables along with whole grains and lean meats, nuts, and beans is a safe, easy and healthy way to prevent obesity (3).

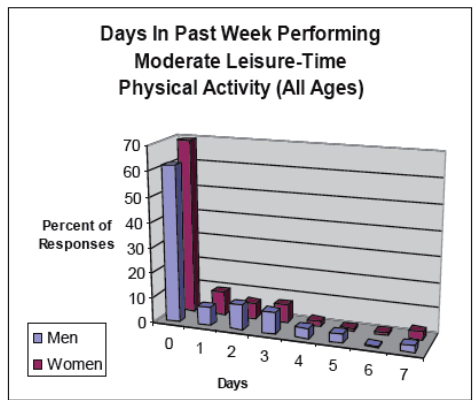
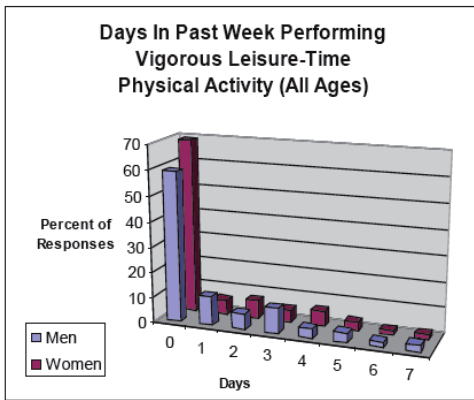
Fruits and vegetables as part of a healthy diet are also important not only for weight management and chronic disease prevention, but for optimal child growth. Supporting increased fruits and vegetables access, availability, and reduced price are key strategies towards the Centers for Disease Control and Prevention's (CDC) goal of improved fruits and vegetable consumption and thus improved nutrition among all Americans.

Increased Physical Activity in Residents

Regular physical activity is one of the most effective ways of improving or maintaining good health. A few benefits resulting from physical activity include: easier management of weight, reduced risk of cardiovascular disease, reduced risk for type 2 diabetes and metabolic syndrome, reduced risk of colon and breast cancer, strengthens bones and muscles, improves mental health and mood, improves ability to do daily activities and prevent falls in older adults, and increases longevity.

Only a few lifestyle choices have as large an impact on overall health as physical activity. People who are physically active for about 7 hours a week have a 40 percent lower risk of dying early than those who are active for less than 30 minutes a week (9).

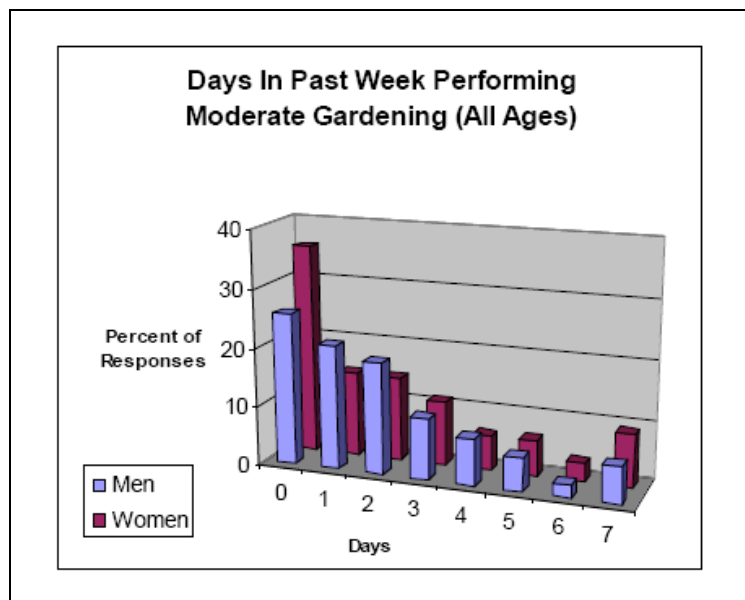
Unfortunately, it is well established that Americans get insufficient physical activity, and this finding was confirmed on a local basis by the 2007 study of physical activity levels conducted jointly by the Knox County Health Department and the University of Tennessee. Among the findings was that the great majority of county residents have no moderate or vigorous (i.e., sufficiently strenuous to produce health benefits) physical activity in the course of a typical week:



Source: Knox County Health Department

Roughly 60 percent of men and 70 percent of women reported no days of either moderate or vigorous leisure-time physical activity in the past week.

Fortunately, high amounts of activity or vigorous-intensity activity are not required to reduce the risk of premature death. Gardening represents one of these moderate intensity activities that lower the risk of all of the aforementioned health detriments. In this study, those who did engage in physical activity stated gardening was one of the most popular of the non-sporting activities they could engage in that increased their physical activity



Over 40 percent of respondents (45 percent of men / 39 percent of women) reported at least one day of vigorous gardening activity in the last week, and an even higher percentage reported moderate levels of activity performing yard work in the past week (73 percent of men / 64 percent of women). This activity included mowing grass, raking leaves, planting, and weeding. One to three days of yard work in the last week were most commonly reported.

While the overall physical activity report presented a rather dismal picture, these findings indicated a potential bright spot where residents might be encouraged to become more active - through gardening. The economic downturn and increased public awareness of the financial and health benefits of fruit and vegetable gardening since the survey was taken reinforce the potential of such activity in meeting community needs on several levels. Community gardening also offers a means to get to know one's neighbors better through a common activity, and encourages consumption of locally sourced food.

Increase in Community Collaboration and Cohesion

Community gardening has a huge potential to encourage people to meet their neighbors, get to know one another, and encourage their competitive spirit. Few things encourage people to push themselves more than competitive spirit. In the physical activity survey of county residents, team activities were more popular than solitary ones and resulted in greater levels of physical activity in a given week. Organizing teams of community gardeners in friendly competition between neighborhoods is one way to encourage sustained interest over the course of a growing season among the garden plots. Team members would also encourage each other's continued participation with a collective goal in mind. A simple registration process facilitated through the Health Department and/or Parks and Recreation might serve as the organizing catalyst, assisted by community volunteers.

Another strong motivating factor for many people is the urge to do good works in their community. Community gardens can be sites for mentoring of the young, assisting the elderly and ill, providing healthful food for the needy, and in general forging stronger bonds between the various members of a community. These aspects would be natural goals for community gardens organized through faith communities or local civic groups from the Boy Scouts to the Lions Club. The best benefit: greater physical activity for all those participating comes at no extra cost.

Community gardens have also shown to increase the economic potential of a community. Studies have revealed that in areas surrounding community gardens there is typically an increase in the number of owner-occupied dwellings, more personal income (as a result of attracting people with higher incomes to the community), and rent (12). This in turn will increase the resident's confidence in their community and they will be more apt to sustain the gardens as a result.

Challenges

Zoning Codes

Not all cities' zoning codes allow the placement of community gardens. Before proceeding, the site and plans for development need to be approved by the local planning agency; in this case it would be the Metropolitan Planning Committee (MPC).

Zoning Code in Knoxville does not specifically prohibit community gardens but does have a list of do's and don'ts. It is accepted on almost all the residential zones in the city as a "permitted use". However "the raising of farm animals or poultry" is excluded from this, which is why Knoxville is currently drafting a hen ordinance.

The zones where "agricultural crops" are allowed become more difficult to interpret. "Agricultural Use" is defined in the City's Zoning ordinance as "Farming, including all forms of agriculture, the growing of crops in the open, dairying, grazing, the raising and maintaining of poultry and other livestock, horticulture, viticulture, floriculture, forests, and woods. The feeding or disposal of community or collected garbage shall not be deemed an agricultural use, nor shall commercial feed lots, the raising of fur-bearing animals, fish or minnow hatcheries, riding academy, livery or boarding stables or dog kennels be so considered."

This classification can be tricky in specific zones including OS-1, where "home gardens" are allowed. If there was a strict interpretation this could be a problem on a lot where there isn't an existing home.

The zones where agricultural crops are excluded from permitted uses include: R-1EN, R-P1, R-4, O-3, C-1, and TND-1. Again if there is a home on the lot in those zones, then gardens are allowed as an accessory use. If there is not a home dwelling, it may not be permitted.

One way to mitigate this issue is to clearly define "community garden". Describe exactly what it entails, what is needed on the property, including a water meter, and allow it to be acceptable under relevant codes such as residential zoning code and agricultural zoning code.

Another way is to model our code and definitions after other cities, like Minneapolis:

"Community gardens are a permitted use in all zoning districts (subject to the specific development standards) apart from the B4-Downtown Business District and the I3-General Industrial district. The parcels shown in green indicate areas where community gardens are permitted; the gray parcels indicate areas where community gardens are prohibited. The specific development standards for a community garden are as follows: (1) Overhead lighting is prohibited. (2) Signage is limited to a single, non-illuminated, flat sign of four square feet. (3) No more than two vehicles shall be parked onsite, excluding those parked within an enclosed structure. (4) Retail sales shall not be permitted, except as an approved temporary use.

A community garden can be a permanent or temporary use. As long as it is a permitted use in the particular zoning district the duration is not regulated by the zoning code. Plantings are allowed in required yards provided they are not traffic or visibility obstructions. Fences, including trellises, are allowed in required yards subject to the standards governing fence location, maintenance, height and design (Chapter 535 Article VI). Signs are allowed in a required front or corner side yard subject to the specific development standards. Other obstructions (i.e. raised planting beds, benches, etc.) are not allowed in a required yard.” (20)

With specific definitions and clear cut siting regulations, like in Minneapolis, gardens could be put into place by communities all over Knox County, assuming they meet the required criteria.

Rural vs. Urban and Suburban Siting

There are issues surrounding both rural and urban settings when making decisions as to garden siting. A study of community gardens was performed in Upstate New York and overall, the results were very positive. Most common reasons for participation in community gardens were access to fresh/ better tasting food, to enjoy nature, and because of health benefits, including mental health. Urban areas specifically mentioned the enjoyment of nature/open spaces, benefits to mental health, and a food source for low-income households more than rural areas. The practice of traditional culture was more commonly cited for rural areas. A lack of access to land, which people were permitted to cultivate, was mentioned in both urban and rural areas (13).

One reason the urban areas may not have mentioned the benefits to their low income communities is because a majority of them are low income, and they may not have recognized the benefits. Urban areas may not mention practice of traditional culture because those areas tend to attract people of a much more diverse background than rural, and thus would not have one common ‘traditional culture’ to adhere to.

Water Access

Water access is very important to consider when planning a garden of any kind. In Knoxville, as long as the garden is placed on a site that has a building/building permit and an address, this is not a problem. A problem may arise with the acquisition and use of a vacant lot. Without an address, building or building permit, Knoxville will not allow a water meter to be hooked up on a property. Again, one way to mitigate this issue would be to define ‘building’ and ‘community garden’ or to discuss this issue with the water and utilities company.

Security

The garden site needs to be relatively secure from theft of the produce raised there when the site is unattended, and the community members working the site need to feel that the location is a safe place to be or they will not feel comfortable going to the site.

Barriers such as fencing, lighting at night, placing the garden where it is clearly visible from areas that have foot or vehicle traffic, and siting the garden near a facility that is used for other purposes (a church, a sponsoring business or group, a library or school, or a sports field / tennis court) can help protect the crops from theft, and will also contribute to a sense of security among the elderly or others who might feel insecure in a relatively isolated and/or poorly lit garden site.

Ideally, the nearby facility can also be a source of water and perhaps even storage of tools (shovels, hoes, wheelbarrows, etc.) for the community gardeners. Access to the facility for rest room use, a break from the heat on a hot day, and drinking water for the gardeners would add to user-friendliness, especially for the elderly.

Community Interest

A key element to sustaining a garden is residents' opinion of it. Apathy will kill a garden faster than lack of water! The participation and support of diverse community members help a community garden to thrive. These members include residents, partner institutions (e.g., schools, county health departments, universities), and volunteers (e.g., businesses, civic associations). Gardens allow individuals and groups to contribute various knowledge, skills, and experiences to a community effort. The business community could contribute tools and lend equipment or donate seeds and starter plants (11).

Community members should also plan to meet and form a task force to encourage and support the placement of community gardens. In order to do this, they would need to learn from those that have done it before and who are willing to be mentors in the future. A few community gardens already exist in Knoxville, so an ideal plan would be to meet with the organizers of those sites and find out what process they used to make their garden a reality. In Knoxville, there are 27 community gardens organized by the Knoxville-Knox County Community Action Committee (CAC), including eight children's gardens at Boys and Girls Clubs and Head Start programs. Most are at public housing communities. An estimated 200 gardeners participate in the community gardens around Knoxville, and 90 percent of them are seniors (14). Some examples are Park Ridge Community Garden, Love Towers Community Garden and the City of Knoxville's Community Nourishment Garden (which is new this year). Knoxville is lucky to have the Green Thumb program which works collaboratively with Beardsley Community Farm, the CAC, and UTK's Agriculture program. This program gives free seeds and plants as well as gardening lessons to low-income Knox County residents. Programs like these work to raise interest and understanding of community gardens and should be utilized as much as possible.

Community members should also be aware of the time and energy commitment a community garden will require. They will be required to till, plant, seed, water, and weed as well as other tasks. This will not be a problem as long as there are multiple people involved, including the aforementioned mentor.

Recommendations

Specific recommendations for Lonsdale, Inskip and Mascot

Three communities selected to pilot Healthy Kids Healthy Communities (HKHC) community gardens are Lonsdale, Inskip and Mascot. Each community has its own characteristics, but they do have one main factor in common: all three are low SES communities.

However, Lonsdale and Inskip are more suited for community gardens than Mascot for a number of reasons. Both Lonsdale and Inskip are close, tight knit communities with sidewalks that provide the possibility of people walking to and from the garden site.

Mascot has no sidewalks and is a very rural area. There are many more options for garden sites in Mascot because there is so much more open space, but there would be very limited access to water and no way to get to the garden (other than by car) in order to maintain it. Lonsdale and Inskip are in the opposite situation. There are very few places to site the garden, but wherever they site it has more opportunity to be close to a water source and will be easy to access by the residents.

Areas of below average food access, availability and justice (i.e., “food deserts”) and low SES should be identified on a county wide basis by KCHD in conjunction with MPC and KGIS, to plan effectively for the expansion of community gardens beyond these three target communities.

General Recommendations for Knox County

- Site Gardens in Food Deserts; Increase Food Access and Availability

Gardens need to be placed in food deserts in order to increase healthy food access and availability. Limited access to nutritious food, like fruits and vegetables, is linked to poor diets and, ultimately, to obesity and diet-related diseases. Increasing access to these foods is imperative to improving the health of all of Knox County’s residents, and community gardens are one way to get there.

- **Site Gardens in Low SES Communities: Increasing Food Affordability and Food Justice**

Everyone should be able to afford and have access to healthy food. Residents of low-income areas typically have less means to purchase healthy foods. In combination with poor access and availability, this prevents such neighborhoods from purchasing the healthy choice. Community gardens present the opportunity to increase food affordability because it only costs them physical energy and time. They will increase food justice by equaling the playing field when it comes to offering healthy choices.

- **Site Gardens Near Water Access**

Many times during planning, small things can be forgotten. A convenient, easy to access and cost effective water source is important when planning a community garden. Ideas include placing the gardens in a city or county run park, next to a school, near a senior center or close to an apartment building or condo complex. This would allow the cost of the water to be placed on a large group of people making it easy to afford and would allow for parks and recreation departments or city/county government to have some ownership and participate in maintenance.

- **Site Gardens Near Gardeners**

A key element to sustaining a garden is residents' involvement. The participation and support of diverse community members help a community garden to thrive. Community members/gardeners include residents, partner institutions (e.g., schools, county health departments, universities), and volunteers (e.g., businesses, civic associations).

Some community gardeners may have mobility issues or trouble facilitating transport of produce home. Location of the garden near residences of the gardeners, or other locations they frequent like a school or library, should be done whenever practical.

Conclusion

Community gardens offer many benefits to the community. They enhance nutrition and physical activity and promote the role of public health in improving quality of life. They will increase access to healthy fruits and vegetables, they will increase physical activity of the residents and they'll increase social capital by encouraging community cohesion and collaboration. These things put together will help to improve the health, quality of life, and even economic stability of the community.

Deciding where to site the gardens can be challenging, but there are guidelines that can be followed that have been developed and tested in other communities. Be certain that residents are committed to participating in a community garden and all that it entails

before beginning the process. Basic needs need to be taken care of first: ensure there is a water source nearby and that the site is secure from theft or vandalism..

When prioritizing communities, focus on those that are disadvantaged, i.e. food deserts, poor food availability and poor food justice. Planners should look for areas where zoning code will allow a garden to be placed, or where parks or schools can donate land to be used. If the zoning code does not allow a garden or is hard to interpret, meet with the local planning committee and get a better understanding of what is allowed vs. what is not allowed. If gardens are not allowed, community members should promote that they should be with their local commission, council or planning committee.

Lastly, government representatives must identify and partner with those in the community that have worked on gardens before. These mentors can lead the way through barriers and challenges as well as share successes and new ideas.

All of these are factors are necessary for a successful community garden. When thriving, community gardens can improve people's quality of life by providing a catalyst for neighborhood and community development, beautifying neighborhoods, producing nutritious food, reducing family food budgets, conserving resources and creating opportunities for recreation, exercise, therapy and education.

References

1. <http://www.cdc.gov/healthyplaces/hia.htm>
2. <http://www.fruitsandveggiesmatter.gov/benefits/index.html>
3. http://www.cdc.gov/healthyweight/healthy_eating/fruits_vegetables.html
4. <http://www.fruitsandveggiesmatter.gov/downloads/StateIndicatorReport2009.pdf>
5. <http://www.cdc.gov/healthyweight/effects/index.html>
6. <http://www.cdc.gov/obesity/causes/economics.html>
7. <http://www.cdc.gov/obesity/childhood/index.html>
8. <http://www.cdc.gov/obesity/childhood/consequences.html>
9. <http://www.cdc.gov/physicalactivity/everyone/health/index.html>
10. <http://fooddesert.net/>
11. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447988/>
12. <http://www.medicalnewstoday.com/articles/163259.php> The Benefits of Community Gardens
13. <http://www.cityfarmer.org/CGNewYork.html>
14. <http://www.knoxnews.com/news/2008/jul/19/garden-party-people/>
15. Morland K, Wing S, Diez Roux A. The contextual effect of the local food environment on residents' diets: the Atherosclerosis Risk in Communities Study. *Am J Public Health* 2002;92(11):1761-7.
16. Sharkey JR, Horel S. Characteristics of potential spatial access to a variety of fruits and vegetables in a large rural area. Paper presented at: Understanding the Economic Concepts and Characteristics of Food Access; January 23, 2009; Washington, DC. . <http://www.npc.umich.edu/news/events/food-access/sharkey.pdf> Accessed April 12th, 2010.
17. Ver Ploeg M, Breneman V, Farrigan T, Hamrick K, Hopkins D, Kaufman P, et al. Access to affordable and nutritious food — measuring and understanding food deserts and their consequences: report to Congress. US Department of Agriculture; 2009 <http://www.ers.usda.gov/Publications/AP/AP036/> Accessed April 12th 2010
18. Powell LM, Auld C, Chaloupka FJ, O'Malley PM, Johnston LD. Associations between access to food stores and adolescent body mass index. *Am J Prev Med* 2007;33(42):S301-7. Accessed April 12, 2010
19. <http://www.cityfarmer.org/CGNewYork.html>
20. <http://www.ci.minneapolis.mn.us/dhfs/garzone.pdf>
21. Armstrong, Donna (2000) A Survey of Community Gardens in Upstate New York: Implications for Health Promotion and Community Development. *Health and Place*;6(4):319-327
22. Hynes HP (1996) *A Patch of Eden, America's Inner-City Gardeners* River White Junction, Vermont: Chelsea Green Publishing Co.
23. Murphy R (1991) 'Keeping a good thing going, a history of community gardening in the U.S.,' *Green-Up Times*, Newsletter of the NY Botanical Garden's Bronx Green-Up Program, 3, pp. 1.
24. Wardle, J., Robb, K. A., Johnson, F., Griffith, J., Brunner, E., Power, C., et al. (2004). Socioeconomic variation in attitudes to eating and weight in female adolescents. *Health Psychology*, 23, 275–282.

25. Garn, S. M., Bailey, S. M., Cole, P. E., & Higgins, I. T. T. (1977). Level of education, level of income, and level of fatness in adults. *American Journal of Clinical Nutrition*, 30, 721–725.
26. Garn, S. M., Hopkins, P. J., & Ryan, A. S. (1981). Differential fatness gain of low income boys and girls. *American Journal of Clinical Nutrition*, 34, 1465–1468.
27. da Veiga, G. V., da Cunha, A. S., & Sichieri, R. (2004). Trends in overweight among adolescents living in the poorest and richest regions of Brazil. *American Journal of Public Health*, 94, 1544–1548.
28. Hernandez, B., Gortmaker, S. L., Colditz, G. A., Peterson, K. E., Laird, N. M., & Parra-Cabrera, S. (1999). Association of obesity with physical activity, television programs and other forms of video viewing among children in Mexico City. *International Journal of Obesity*, 23, 845–854.
29. Millar, W. J., & Wigle, D. T. (1986). Socioeconomic disparities in risk factors for cardiovascular disease. *Canadian Medical Association Journal*, 134, 127–132.