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A survey of community gardens in upstate New York: Implications for health promotion and community development

Donna Armstrong*

University at Albany SUNY, Department of Epidemiology, SPH, One University Place, Rensselaer, NY 12144-3456, USA

Abstract

Twenty community garden programs in upstate New York (representing 63 gardens) were surveyed to identify characteristics that may be useful to facilitate neighborhood development and health promotion. The most commonly expressed reasons for participating in gardens were access to fresh foods, to enjoy nature, and health benefits. Gardens in low-income neighborhoods (46%) were four times as likely as non low-income gardens to lead to other issues in the neighborhood being addressed; reportedly due to organizing facilitated through the community gardens. Additional research on community gardening can improve our understanding of the interaction of social and physical environments and community health, and effective strategies for empowerment, development, and health promotion.

Keywords: Empowerment; Community development; Social networks; Community gardens; Health promotion

1. Introduction

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 (Francis et al., 1994; Hynes, 1996; Murphy, 1991; Boston Urban Gardeners, 1982). During and after both World Wars, community gardens provided increased food supplies which required minimal transporting. During the Great Depression, city lands were made available to the unemployed and impoverished by the Work Projects Administration (WPA); nearly 5000 gardens on 700 acres were cultivated in New York City through this program (Hynes, 1996). During WWII, the US Department of Agriculture reported that national health as well as personal well-being were dependent on the consumption of fresh vegetables, which led to the Victory Gardens Program and the production of approx. 40% of the fresh vegetables consumed in the US from an estimated 20 million gardens (Murphy, 1991).

Research on community gardening suggests a variety of additional benefits, for both individuals and for communities. One study reported that community gardeners have greater consumption of fresh vegetables compared with non-gardeners, and lower consumption of sweet foods and drinks (Blair et al., 1991). There is evidence that community gardens benefit the psychological well-being (McBey, 1985; Francis et al., 1994; Ulrich, 1981; Kaplan, 1973) and social well-being (McBey, 1985; White and Lake, 1973; Gold, 1977;

* Tel.: +1-518-402-0402; fax: +1-518-402-0381.

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Sommer et al., 1994) of gardeners and local residents (Sommer et al., 1994). One project estimated savings of between $50 and $250 per season in food costs for community gardeners (Hlubik et al., 1994). Furthermore, this study reported that 5000 lb of vegetables were produced by 37 gardeners and "1000 lb of vegetables were shared with friends and neighbors, local soup kitchens and senior centers." Wider neighborhood support for gardens was demonstrated in one area by an unexpected lack of vandalism in the community gardens (Hlubik et al., 1994) (personal communication Dr Dorothy Blair, Pennsylvania State U). In New York City, an outpouring of local neighborhood support occurred in response to a city decision to cancel the leases on numerous community gardens (Monaster, 1995; Rosser, 1994), some of which had existed as long as 20 years. Community gardens have generated particularly strong local neighborhood involvement with the inclusion of music, theater and storytelling, by incorporating a community performance area and hosting such activities in the gardens (Fisher, 1992; Raver, 1993; Martinez-Salgado et al., 1993; Winkeller, 1984). Also, how often city gardens and parks are frequented has been negatively correlated with local crime (Gold, 1977; Harold Lewis Malt Associates for US Dept. of Housing and Urban Development, 1972; Baker, 1997).

Health research has focused primarily on exercise associated with gardening, and benefits to individual gardeners (Blair et al., 1991; Hlubik et al., 1994). Gardening is one of the most commonly practiced types of exercise (Crespo et al., 1996; Yusuf et al., 1996; Magnus et al., 1979) and is a recommended form of physical activity (Pate et al., 1995). During 1988–1991, 59% of men and 42% of women in the US reported gardening as a source of leisure time exercise (Crespo et al., 1996). Gardening has been ranked a moderate to heavy intensity physical activity (Brooks, 1988; Ford et al., 1991; Dannenberg et al., 1989) and in one study a significant change in total cholesterol, HDL cholesterol and systolic blood pressure was associated with either walking or gardening, after controlling for confounders (Caspersen et al., 1991). Furthermore, participants spent a greater amount of time per week doing gardening (225 min/wk) compared with other leading activities, such as walking (160 min/wk) and bicycling (170 min/wk) (Caspersen et al., 1991).

Gender roles apparently influence levels and types of physical activity, such that men are more likely to exercise (Crespo et al., 1996; Yusuf et al., 1996; King et al., 1992) and to exercise more vigorously than women (Crespo et al., 1996; King et al., 1992; Mitchell et al., 1994; Ford et al., 1991). However, there is evidence that women tend to spend equal or greater amounts of time gardening compared with men. In the Framingham Offspring study, approx. equal amounts of time were spent on gardening and walking during spring and summer seasons, and women spent as much, or greater amounts of, time on both of these activities as men (Dannenberg et al., 1989). In a study in Pennsylvania, gardening was the leading leisure-time physical activity and was more common among women than men of higher socioeconomic status, 25 and 20% respectively, and there was little difference between women and men of lower socioeconomic status, approx. 14% (Ford et al., 1991).

The purpose of this descriptive study was to identify and survey community garden programs throughout upstate New York, during 1997–1998. Characteristics of community garden programs, individual gardens and gardeners were documented, and characteristics which may be useful to facilitate neighborhood development and health promotion were analyzed and discussed.

2. Methods

Cooperative Extension offices serving 56 counties in upstate New York (all counties outside of New York City) were contacted to identify community garden programs. In all states, Cooperative Extension is administered through land-grant universities (with grant support from the US Department of Agriculture), and faculty in nutritional and agricultural sciences provide program direction, in-service training and teaching materials for county programs. Cornell University serves this role in New York State. Cooperative Extension has two main program components, nutrition programs and gardening/agricultural programs, both of which aim to increase the self-sufficiency of families. One activity of the agricultural component of Cooperative Extension is the Master Gardeners Program. This program selects and trains volunteers in a series of technical courses. These include soil diagnosis and enrichment, vegetable, fruit and herb gardening, diseases, insects and pest control, tree and shrub care, annuals and perennials, and integrated pest management. These trained volunteers help with gardening and other home and grounds questions and help maintain demonstration and public gardens throughout the state. To remain active in the program, Master Gardeners volunteer at least 30–50 h per year. Cooperative Extension staff, especially in the Master Gardeners Programs, are often informed about all of the community gardens operating in their county, even when they are not directly involved in the operation of a garden.

Offices of city mayors and village clerks were also contacted in counties where Cooperative Extension agents could not identify any community gardens, and in counties with larger cities (e.g. Buffalo),

which might have multiple privately operated gardening programs. Community garden program coordinators were also asked during the interview if they were aware of additional garden programs in their county, city or village.

A total of 25 community garden program contacts were identified in 22 counties. One garden coordinator declined to participate, we failed to reach one coordinator after numerous attempts, and three community garden programs no longer existed, partly from lack of funding. Therefore, 20 program coordinators were interviewed in the survey. If garden programs self-identified as 'community' gardens then they were included in the survey.

A standardized telephone interview was administered to community garden program coordinators between August 1997 and August 1998. The interviews required 30 min to 3 h to administer, depending on the number of gardens in a program. In general, the interviews were well received despite the length, since most coordinators enjoyed the opportunity to describe their garden programs. Two questions, regarding the surrounding neighborhoods where gardens were located and regarding anticipated long-term use of the land on which gardens were sited, were added after the first two programs were interviewed. Data from the interviews were computerized using Microsoft Excel and data analysis was conducted using SAS 6.02. Information was collected on both the characteristics of garden programs and on all of the individual gardens in each of the programs.

Coordinators of a total of 20 community gardening programs were interviewed, these programs included a total of 63 gardens. The involvement of garden program coordinators with individual gardeners varies, in part, depending on the number of gardens in a program. However, coordinators generally enroll and inform each garden participant about the rules and organization of a community garden (e.g. mandatory participation in a workday), each year of their participation. Coordinators also may organize the availability of garden materials (e.g. soil amendments) and organize and attend cooperative activities. Therefore, coordinators have multiple opportunities to know and discuss motivations and program benefits as perceived by gardeners. Furthermore, coordinators routinely interact with town administrations, who often donate services (e.g. install a water outlet or provide trash removal), and neighborhood organizations (e.g. churches and schools), which may help legitimize a community garden as a desirable community tradition. Therefore, coordinators are familiar with local neighborhoods and tend to be aware of community-level activities and organizing, which may impact or derive from each community garden.

3. Results

Fifteen of the 20 programs surveyed maintained only one community garden each, two programs maintained 2–3 gardens each, and three programs maintained 13–14 gardens each. Table 1 shows selected characteristics of the 20 community garden programs surveyed, as reported by the program coordinators. Five programs were located in rural areas and 15 programs were located in urban and suburban areas. Most of the programs (90%) had less than 200 gardeners participating; the larger programs, with greater numbers of participating gardeners, were located in urban areas. All of the community garden programs that were located in rural areas were operated with the support of at least one paid staff. One of the rural programs and four of the urban programs were operated by Cooperative Extension, the remaining were operated by private organizations. One half of the programs reported having 10 or more regular volunteers helping with the operation of their program, one half of the programs distributed a regular program newsletter. In addition, 90% of the programs provided technical support to individual gardeners, 30% provided educational classes, 80% provided soil tilling to gardeners, and 55% provided seeds and seedlings (data not shown).

Less than one half of the programs had soil testing performed (40%), which would identify garden sites in their programs that had contaminated soil, for example, with heavy metals. Almost one half of the programs in urban areas had testing performed (47%). Among the eight programs that had testing performed, only urban programs reported soil contamination, for example, with lead, cadmium and organochlorides (e.g. PCBs).

Differences in the underlying philosophies and goals of community garden programs, as well as surrounding environmental and social conditions, were revealed by rules on chemical use and the sale of produce and by fencing of community gardens. Overall, 60% of the programs either prohibited the use of any chemicals or allowed only chemical fertilizers to be used in gardens. However, 60% of rural programs compared with 33% of urban programs allowed the use of chemical herbicides and insecticides, which also may reflect greater difficulty with garden pest control in rural areas. In addition, none of the programs in rural areas fenced their gardens; furthermore, none of these rural programs reported difficulties with vandalism of the gardens (with the exception of limited vandalism by youths). In urban areas, 67% of programs fenced their gardens. However, approx. one half of the urban programs reported problems with vandalism, with no differences in the report of vandalism between programs that did and did not fence their gardens. One

half of the garden programs reported that gardeners did not sell any of their produce, although their programs did not prohibit such sales; 10% of the programs prohibited the sale of produce grown in the community gardens.

Overall, the most common reasons reported by the coordinators for participation in community gardens (Table 2) were access to fresh/better tasting food, to enjoy nature, and because of health benefits, including mental health. The data are suggestive of some differences between rural and urban programs. In urban areas, the enjoyment of nature/open spaces, benefits to mental health, and a food source for low-income households were cited more frequently than in rural areas, and 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 a common theme mentioned by coordinators in both urban and rural areas. The coordinator of a garden in a retirement condominium community, described the importance of their garden for helping residents transition from a lifestyle of home ownership to the retirement community, which involved a lack of personal land.

Table 3 shows characteristics of the 63 community gardens, which were maintained by the 20 garden programs surveyed. A substantial number of gardens (32%) were established 10 or more years ago, and 46% of the gardens were located in low-income urban areas. In approx. 30% of the gardens, the majority of the gardeners were African American or other racial minority, or Hispanic (data not shown). Approx. 35% of the gardens were cultivated by a bi-racial group of gardeners (i.e. approx. 25–49% were minority gardeners), the remaining gardens (35%) had a majority of Caucasian gardeners. Slightly over one half of the gardens had bulletin boards, for announcements, and a sitting area with a bench was present in 44% of gardens; one garden incorporated a path, designed to encourage walking for exercise. In 87% of the gardens, gardeners worked to some degree cooperatively, such as sharing tools, vegetables and cultivating. However,

Table 1
General characteristics of community garden programs ($n = 20$), by rural or urban area, upstate New York, 1997–1998

Community garden program characteristics	Rural area $n = 5$ (%)	Urban area $n = 15$ (%)	Overall $n = 20$ (%)
Number of gardeners			
< 35	5 (100)	5 (33)	10 (50)
35–200	0	8 (53)	8 (40)
201–350	0	2 (13)	2 (10)
Program employs staff			
No	0	9 (60)	9 (45)
Yes	5 (100)	6 (40)	11 (55)
Number of regular program volunteers			
None	1 (20)	0	1 (5)
1–10	1 (20)	7 (47)	8 (40)
11–35	3 (60)	7 (47)	10 (50)
Don't know	0	1 (6)	1 (5)
Program newsletter distributed			
No	4 (80)	6 (40)	10 (50)
Yes	1 (20)	9 (60)	10 (50)
Garden sites tested for soil contamination			
No	4 (80)	7 (47)	11 (55)
Yes	1 (20)	7 (47)	8 (40)
Don't know	0	1 (6)	1 (5)
Chemical-use in gardens			
No chemicals allowed	1 (20)	7 (47)	8 (40)
Fertilizers only	1 (20)	3 (20)	4 (20)
Herbicides/insecticides used	3 (60)	5 (33)	8 (40)
Gardens Fenced			
No	5 (100)	5 (33)	10 (50)
Yes	0	10 (67)	10 (50)
Produce sold by gardeners			
No	2 (40)	8 (53)	10 (50)
Yes	3 (60)	4 (27)	7 (35)
Not permitted	0	2 (13)	2 (10)
Don't know	0	1 (7)	1 (5)

cooperative activities which were planned, rather than spontaneously occurring in the gardens, were less common. For example, regular meetings of the gardeners occurred in 49% of gardens, and planned cooperative work-days occurred in 41% of the gardens.

A variety of community organizations and private businesses were involved with the gardens by providing the program coordination and/or the land, by cultivating a plot, or by providing volunteer labor in the gardens. These organizations included the Hunger Action Network, Ameri Corps, Aids Housing Project, a battered women's shelter, day-care center, children's theater group, after-school organization for teens, a rehabilitation program for the developmentally disabled, and gardens located on the properties of an urban office building and a Coca Cola plant. In 28% of the gardens, a local school or church maintained a plot in the community garden. Variations in the physical structuring and organization of gardens were related to the types of community groups involved, especially depending on the primary organizer. For example, some gardens were managed as a single gar-

Table 2
Reasons for participating in community garden programs[a], by rural or urban area, upstate New York, 1997–1998

Reasons	Rural area $n = 5$ (%)	Urban area $n = 15$ (%)	Overall $n = 20$ (%)
Fresh food is/tastes better			
No	1 (20)	1 (7)	2 (10)
Yes	4 (80)	14 (93)	18 (90)
Organic food (no sprays, chemicals)			
No	2 (40)	6 (40)	8 (40)
Yes	3 (60)	9 (60)	12 (60)
Exercise			
No	1 (20)	5 (33)	6 (30)
Yes	4 (80)	10 (67)	14 (70)
Mental health benefits			
No	2 (40)	3 (20)	5 (25)
Yes	3 (60)	12 (80)	15 (75)
Food source for low income households			
No	3 (60)	6 (40)	9 (45)
Yes	2 (40)	9 (60)	11 (55)
Good family/children's activity			
No	2 (40)	5 (33)	7 (35)
Yes	3 (60)	10 (67)	13 (65)
Enjoy nature/open space			
No	2 (40)	2 (13)	4 (20)
Yes	3 (60)	13 (87)	16 (80)
Tradition cultural practice			
No	1 (20)	8 (53)	9 (45)
Yes	4 (80)	7 (47)	11 (55)
Healthy activity			
No	1 (20)	5 (33)	6 (30)
Yes	4 (80)	10 (67)	14 (70)
Income supplement (from sale of foods grown)			
No	4 (80)	14 (93)	18 (90)
Yes	1 (20)	1 (7)	2 (10)

[a] Reported by community garden program coordinators.

Table 3
Characteristics of community gardens ($n = 63$), upstate New York, 1997–1998

Garden characteristics	$n = 63$ (%)		
Age of gardens (years)			
1–4	21 (33)		
5–9	14 (22)		
10–21	20 (32)		
Don't know/missing	8 (13)		
Located in low-income areas[a]			
	Rural area	Urban area	Overall
No	5 (100)	19 (33)	24 (38)
Yes	0	29 (50)	29 (46)
Don't know/missing	0	10 (17)	10 (16)
Bulletin board present in the garden			
No	27 (43)		
Yes	33 (52)		
Don'tknow/missing	3 (5)		
Garden includes a sitting area, with bench(s)			
No	32 (51)		
Yes	28 (44)		
Don'tknow/missing	3 (5)		
Some activities done cooperatively by gardeners			
No	7 (11)		
Yes	55 (87)		
Don'tknow/missing	1 (2)		
Gardeners hold regular meetings			
No	24 (38)		
Yes	31 (49)		
Don'tknow/missing	8 (13)		
Cooperative work days planned			
No	36 (57)		
Yes	26 (41)		
Don'tknow/missing	1 (2)		
A local school or church maintains a plot			
No	35 (56)		
Yes	18 (28)		
Don'tknow/missing	10 (16)		
Garden improved attitudes of residents about the neighborhood[b]			
No	19 (30)		
Yes	32 (51)		
Don'tknow/missing	12 (19)		
Garden has lead to other neighborhood issues being addressed[b]			
No	28 (44)		
Yes	21 (33)		
Don'tknow/missing	14 (22)		
Garden site is in jeopardy[a]			
No	47 (75)		
Yes	7 (11)		
Don'tknow/missing	9 (14)		

[a] Questions added after two program interviews were completed.

[b] Reported by community garden program coordinators.

den which everyone cultivated together, rather than being split into separate plots that were maintained by individual gardeners. Gardens that were cultivated communally tended to be closely tied to a community service organization, although these gardens also appeared to receive support from the wider community. Also, a garden located on the property of a public housing project, which was primarily a children's garden, was cultivated communally and the produce was shared among the children and their families.

Having a community garden in a neighborhood was reported by coordinators to improve the attitudes of residents toward their neighborhood for 51% of the gardens. This was usually evidenced by improvements in the maintenance of other properties in the neighborhood, reduced littering and increased pride in a neighborhood. For example, some neighborhoods had been featured in city promotions or the local press, highlighting the community garden. However, in another example local residents enjoyed the garden's beauty and recognized the close social network of the gardeners, but the presence of the garden failed to increase local community cohesion because the gardeners were not residents of the immediate neighborhood. In 33% of the gardens, coordinators described additional community organizing which was made possible by a community garden. Examples of the activities and accomplishments which were reported by coordinators to result from community organizing initiated through the community garden, are described in Table 4. Additional neighborhood beautification, tree planting, and crime-watch efforts were common activities stemming from the community gardens. However, not all communities observed these kinds of additional benefits as a result of having a community garden.

Community garden characteristics were examined to identify which characteristics were associated with a garden leading to other neighborhood issues being addressed (data not shown). Community gardens that were located in low-income neighborhoods were four times as likely as gardens not in low-income areas, to lead to other issues in the neighborhood being addressed. Furthermore, gardens located in low-income neighborhoods were four times as likely to be cultivated by mainly African American and other minority gardeners compared with gardens not located in low-income areas. Characteristics including the age of a garden, whether a local church or school maintained a plot, whether gardeners held regular meetings or worked cooperatively were not associated with a garden leading to other issues.

Since community gardens are often located on land which is not owned by the garden program, information was collected on whether each garden was currently threatened with losing use of the land on which it was located. Seven of the gardens (11%) were considered by the program coordinators to be endangered (Table 3). Among these endangered gardens, three gardens had existed for 1–5 years and three gardens had existed for 18–21 years (age missing for one garden), and five of the gardens (71%) had reportedly changed attitudes of residents toward the neighborhood.

4. Discussion

Data from this survey documented a wide variety of populations served by, and participating in, community garden programs. A number of the community gardens had a particular sociodemographic or program focus, for example, serving a particular age-group (e.g. children, retirees), socioeconomic group (e.g. low income neighborhood, public housing project, mothers on welfare), or special population group (e.g. mentally

Table 4
Descriptions of other community benefits resulting from garden organizations/organizing[a]

- Through getting to know people in the village, gardeners became more active in local politics, it raised the level of awareness of what goes on in the village
- Community fought to keep a larger supermarket in the area and won; more development stemmed from this victory
- Different programs interact through the garden, so more awareness between groups
- Children (in a housing project) see it as an actual piece of land that they have control over, they have pride of ownership
- (Program staff) reached out to residents of a lower income housing project to participate in the garden
- Better community cohesion; know everyone on the street now
- People know who to call to initiate other efforts besides the garden
- Surrounding area is very tough, high crime, garden lead to 'neighborhood watch', residents are very involved in watching out for each other
- A new sidewalk was put in on the garden side of the street; trees were put in and landscaping done; stray animals were caught
- Neighborhood Association was established
- Community babysitting developed
- Park and playground were developed

[a] Reported by community garden program coordinator.

handicapped, battered women's shelter). However, many community gardens also were identified which served general neighborhoods, communities or villages. Community gardens were more common in urban areas but this may be due to a greater relative availability of resources and organizational capacity in urban areas, rather than a reflection of less demand for community gardens in rural areas. In both rural and urban areas, lack of access to land, which people were permitted to cultivate, was a commonly described reason for participating in community gardens. Health related reasons were also commonly cited for participating in community gardens, including mental health (Table 2).

Many of the community gardens seemed to facilitate improved social networks and organizational capacity in the communities in which they were located, especially in lower income and minority neighborhoods. Gardens seemed to provide a symbolic focus for some neighborhoods, which increased neighborhood pride and the aesthetic maintenance of neighborhoods. Also, many of the community gardens lead to further neighborhood organizing by providing a physical location for residents to meet each other, socialize, learn about other organizations and activities/issues in their local community. It is possible that this occurred more commonly in lower income communities, in part, due to a greater number of pressing issues which obviously called for attention in these neighborhoods. Nevertheless, the ability of the gardens to serve as a catalyst for residents to begin to address some issues collectively may represent an important public health strategy to facilitate community organizing and empowerment (Wallerstein, 1992; Steckler et al., 1995; Speer and Hughey, 1995) and to increase community capacity (Clark and McLeroy, 1995a,b; Lillie-Blanton and Hoffman, 1995).

Community gardens involve the main characteristics that have been described as important for health promotion in minority communities; these are social support, an emphasis on informal networks, and community organizing through 'multiple change tactics' (Fisher et al., 1992). Such interventions are thought to succeed by "encouraging interpersonal, peer-to-peer tactics for promoting change, (thus) community organization programs may stimulate general social support for change (Fisher et al., 1992)." Data in this study are consistent with this model of interrelatedness of individual social support, group social networks, and community empowerment. These concepts are also related to ideas of 'social cohesion' and 'social capital,' which have been associated with public health (Wilkinson, 1997; Kawachi et al., 1997; Glynn, 1981). Also, the cultivation of gardens communally, rather than as individual plots, reflects cultural valuations of community and individualism, as well as practical issues of transience among the gardeners, which supports the importance of cultural considerations in promoting community organizing and health. Further research on the processes involved in community gardens may provide valuable insights into relationships between these concepts and to mechanisms linking them with public health.

Data from this study have several limitations. The limited resources of this study made it possible to interview only the coordinators of community garden programs, and did not permit interviewing the individual gardeners involved in the programs. Therefore, data describing the reasons for participation in community gardens (Table 2), for example, are the interpretations of program coordinators and may not accurately represent the views of all gardeners. However, most program coordinators had responsibilities for tasks such as enrolling gardeners each season, direct oversight of garden-site operations, coordinating work-days and other cooperative events. Therefore, program coordinators generally possessed considerable knowledge of individual gardens and local neighborhood conditions. Furthermore, data on the characteristics of individual gardens in programs with multiple gardens varied considerably across the individual gardens, which is consistent with the familiarity that most coordinators had with the individual gardens. A paucity of current published information on community gardens made it difficult to design the questionnaire and anticipate the variety of responses and issues which were encountered in the interviews. Therefore, the questionnaire was revised and some questions were added after completing the initial interviews. These revisions improved the quality of data of the remaining interviews but also resulted in missing information for some of the interviews. Finally, an effort was made to identify all of the community garden programs in upstate New York but there were very likely programs which this study failed to locate and contact; it is unknown in what ways these programs may differ from those that were interviewed and reported on in this study. Contacting village clerks and offices of city mayors typically yielded a referral to the county Cooperative Extension office. Cooperative Extension staff often seemed to know about programs in their counties, even those that they were not directly involved with.

Effective health promotion and community empowerment may require the involvement of community lay health workers and active, respected community members (Wallerstein and Bernstein, 1988; Eng and Young, 1992; Freudenberg et al., 1995; Brown and Vega, 1996; Fisher et al., 1992). Community gardening programs suggest a valuable source of community members who may be willing to be engaged in these types of health promotion activities. Health promotion programs

often have a narrow focus; for example, a program may focus only on increasing exercise levels, prevalence of low-fat milk consumption, or improving the management of a specific chronic disease (e.g. blood pressure), which partly reflects categorical funding in public health. Therefore, these programs fail to address common environmental conditions/barriers or relationships between different health-related skills and practices. However, community-based intervention designs which address multiple risk factors for the prevention and management of related chronic disease conditions have been designed and implemented (Brownson et al., 1996; McNabb et al., 1993; Heath et al., 1991; Jenkins, 1991; Macaulay et al., 1997). Individuals involved in community gardening may provide an even more integrated perspective to health promotion and empowerment designs; for example, by improving local, sustainable food systems, improving job skills and employment opportunities, addressing problems of depression and other mental health issues, especially in lower income neighborhoods, addressing the need for green spaces, aesthetics, and lowering crime in urban neighborhoods.

Issues of access to land ownership (especially in low income neighborhoods) and how well democratic processes work in determining uses of public lands may also be important to community empowerment (Zimmerman and Rappaport, 1988). Several of the gardens described in this study were considered to be in danger of losing access to the lands on which they were located. While approx. one half of the gardens overall had reportedly influenced residents' views about their neighborhoods, 71% of the endangered gardens had changed positively views of the neighborhoods in which they were located; three of these gardens were 18–21 years old. Community garden programs often do not own the property on which community gardens are located. The ability of community gardens to affect improvements in neighborhood environments can also cause property values of those neighborhoods to increase, which may in-turn lead to the profitable sale of these properties and destruction of the community gardens. In recent years, property values in New York city have increased dramatically. The potential for profitable property sales is one reason for lease cancellations of community gardens which are sited on city lands, over considerable community protest (Fisher, 1992 Raver, 1993).

Additional research on the potential benefits of community gardens to promote and improve public health is needed. This research may also contribute to further development of theoretical models describing the role of social, physical environments and comprehensive, integrated perspectives to improved community empowerment and capacity, and effective health promotion.

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