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Food Security: An Ecological–Social Analysis to Promote Social Development

MICHELLE L. KAISER

School of Social Work, University of Missouri, Columbia, Missouri, USA

Coupled with the obesity epidemic, food insecurity presents a public health and social crisis. The United States' industrialized food system embodies an unsustainable network of production and unequal distribution of food creating threats to both the natural environment and human development. Ecological, economic, and social systems are interdependent and their relationships to food security are complex and dynamic. Social workers have a unique set of community practice knowledge and skills that can help communities achieve greater access to affordable, healthy food. Building interdisciplinary networks to change food policies and develop sustainable and equitable food systems can address food insecurity.

KEYWORDS   food security, ecological–social perspective, social development, environment

Dr. Martin Luther King, Jr. (1963) once said, "Injustice anywhere is a threat to justice everywhere." In the United States, the prevalence of food insecurity and related health problems are greatest for Hispanic immigrants, female-headed households, Native American Indians, and African Americans (World Hunger Year [WHY], 2009). Oppressed groups that have provided the backbone for food production, manufacturing, processing, and distribution in both the antiquated, simpler, linear food systems and the modern, complex, postindustrialized food webs, are most negatively impacted by the conglomerate issues associated with food insecurity. Globally, the productive capacity of agricultural land is being threatened by population growth, pollution, and climate change. Widespread chemical advances have resulted

in reliance upon fossil fuels in food production. Endangered ecosystems exist in the shadows of soda plants pumping out sugary drinks in areas where dental hygiene is a luxury and food growers rely upon international aid. Ecological, economic, and social systems are interdependent and their relationships to food security are complex and dynamic. The ecological–social perspective provides a useful framework for analyzing food security because of its emphasis on reciprocal interactions between people and their environments.

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BACKGROUND

Defining Food Security

The United States Department of Agriculture (USDA) and the United States Census Bureau developed various versions of the Household Food Security Survey Module, establishing four levels of food security. Food-insecure households include low and very low food security household classifications in which households experience times during the year in which uncertainty about providing an adequate amount of food exist (USDA, 2009b). Food insecure households may reduce food intake because of lack of resources ear-marked for food or obtain food through different strategies, such as adjusting diets, participating in federal food programs, or accessing food pantries (USDA, 2009b).

Strategies for improving food security have generally focused on achieving adequate quantities of foods, often measured in pounds and calories (Kozikowki & Williamson, 2009; New American Foundation, n.d.). Community food security supports additional prevention-oriented strategies that address the quality of foods. North American organizations representing a wide variety of interconnected interests focusing on social, environmental, and economic justice define food security at the community level, wherein, "Community food security is a condition in which all community residents obtain safe, culturally appropriate, nutritionally sound diet through an economically and environmentally sustainable food system that promotes community self-reliance and social justice" (Hamm & Bellows, 2003, p. 37). This definition fits within the ecological–social perspective identifying community food security systems as an analytical framework, and a concept

for strategic change and coalition building (Gottlieb & Joseph, 1997) because of its emphasis on the natural and social environment.

Food Security and Health

In 2008, over 14.6% of U.S. households (17.1 million) were food insecure, with the highest prevalence among African American (25.7%) and Hispanic households (26.9%; USDA, 2009a). Forty-two percent of households with incomes below the 2008 federal poverty level, $21,200 for a family of four (US Department of Health and Human Services, 2010) were food insecure (USDA, 2009b).

Food insecurity as a public health problem is associated with poor health in adults and children, poor cognitive and emotional development in children, and adult depression (Adams, Gummer-Strawn, & Chavez, 2003; Alaimo, Olson, & Frongillo, 2001; Casey, et al., 2004; Chilton & Booth, 2007; Cook et al., 2004; Siefert, Heflin, Corcoran, & Williams, 2001). Research shows a connection with food security, obesity, and chronic health problems related to obesity (Adams et al., 2003; Dietz, 1995; Hamelin, Habicht, & Beaudry, 1999; Tarasuk & Beaton, 1999; Wilde & Peterman, 2006). Persons who are classified as overweight or obese have higher rates of depression, anxiety, atherosclerosis, hypertension, limited mobility, work impairment, low self-esteem, and discrimination, all of which contribute to over $147 billion annually in medical costs (Finkelstein, Trogdon, Cohen, & Dietz, 2009; Hesketh, Wake, & Waters, 2004; Houston et al., 2009; Petry, Barry, Pietrzak, & Wagner, 2008; Rodbard, Grandy, & Shield Study Group, 2009).

FOOD SECURITY ANALYSIS FRAMEWORKS

Food Security as a Human Right

The United Nations (1948) Universal Declaration of Human Rights, Article 25 (1948) used an ecological perspective rooted in a social justice to define "right to food," emphasizing "quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear" (Ziegler, 2002, p. 11). Chilton and Rose (2009) acknowledged the contradictory, "morally reprehensible" (p. 1203) nature of food insecurity in the United States, where food production is so great that surplus commodities exist. Social, health, and economic determinants must be addressed comprehensively. The public must participate in decision-making processes and hold the government accountable for securing access to an adequate variety of quality food (Chilton & Rose, 2009).

Anderson (2008) noted that it is often difficult for low-income Americans to access healthy foods. Limited incomes are associated with limited choices, wherein sugar- and fat-laden foods are cheaper than nutrient-dense food. Transportation problems limit access to suburban-based supermarkets, creating situations in which low-income urban households purchase food from the prolific convenience stores and fast food establishments in low-income neighborhoods (Drewnoski & Specter, 2004; Morland, Wing, Deiz Roux, & Poole, 2002; Nayga & Weinberg, 1999; Winne, 2008).

Policy-makers are challenged to balance social and environmental justice issues in an ecological–social approach to US food security. Production and accessibility of affordable, healthy foods must be considered in terms of human rights (e.g., living wages for farmers) and sustainable agriculture (e.g., incentives for development of organic farming). Historically, food insecurity has been addressed through governmental entitlement programs and charity organizations partially created in response to overproduction of commodity products (e.g., soybeans, grains, and dairy) following World War II. This includes the School Lunch and Breakfast Programs, the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Security Program for Women, Infants, and Children (WIC), food banks, and soup kitchens (Chilton & Rose, 2009; Poppendieck, 1998; Winne, 2008).

Progressive modes of achieving greater access to affordable, healthy food through sustainable and equitable food systems require interdisciplinary networks of community members. Several programs shift production to the hands of consumers (e.g. community, school, and family gardens); others seek food security through community supported agriculture (CSA) programs and farmer's markets. These programs recognize the rights of farmers, of whom only "8% with sales over $250,000 or more can live on farm income alone" (Anderson, 2008, p. 599). Community social workers can advocate for the right to fair working conditions for farm workers and factory workers exposed to unhealthy and dangerous environments, the right to living wages for food system workers, the right to food, and the "right to a clean, health-promoting environment" (p. 600). The ecological–social perspective is the analytical basis for social work to engage in strategies for food security.

Ecological–Social Perspective

Berkes, Colding, and Folke (2003) described the importance of understanding natural and man-made processes in terms of the interactions between the ecological and social systems. This is especially applicable to food systems, which are tied directly to the natural environment. Berkes et al. (2003) argued that environmental changes, like "modification of landscapes, loss of biodiversity, and climate change" (p. 1) must be considered in terms of human contributions because of an increasingly

human-dominated ecological–social system. To maintain the current carry-
ing capacity of ecological–social systems and ensure a sustainable use of
resources to meet the future needs of humans in their environment, atten-
tion must be paid to the adaptive processes of social and economic systems
in light of environmental changes.

Berkes et al. (2003) emphasized the linkages between natural and social
systems, depicting an "artificial and arbitrary" (p. 3) division between the
two. Ecological–social systems are made of nested ecosystems comprised
of abiotic (e.g., water, air) and biotic (e.g., plants, animals) factors that are
self-regulating (N. A. Campbell, Reece, Taylor, & Simon, 2006) and social net-
works consist of multilevel networks of individuals, groups, organizations,
and governments (Robbins, Chatterjee, & Canda, 2006). Many food security
frameworks have conceptualized the complex ecological–social relation-
ships using both sustainable and rights-based approaches for purposes of
research, practice, and analysis.

Food Security Frameworks

Wehler, Scott, and Anderson (1992) devised the Community Childhood
Hunger Identification Project Conceptual Model that analyzes individual
children's characteristics, household features, public and private programs
and strategies, and agricultural policies that address economic resources
and access to food. Food access is defined in terms of food prices, type,
size, and location of stores, and availability of assistance programs. Winne
(2008) found that food access has a major impact on the natural environ-
ment in terms of dependence on oil required for transportation, and the use
of pesticides that affect the water and air quality of interacting ecosystems
comprised of humans and wildlife.

C. C. Campbell (1991) identified private, public, and informal sectors
that impact household resources of money, time, information, and health.
Food acquisition is categorized by three food systems in this model. Normal
food systems emphasize availability and accessibility of diverse food in
stores and commercial operations. Government food assistance programs
include WIC, SNAP, and School Lunch Programs. Alternative food systems
include scavenging, gardening, hunting, fishing, and private gifts from social
networks. C. C. Campbell focused simultaneously on social contexts of food
access and individual biological processes.

Block et al. (2008) used value webs to describe the development of
community food security. This model challenges the community to look
beyond a uni-directional linkage, which is considered a traditional food sys-
tem model. Within this model, values and moral responsibility, like that
required of deep ecology theorists, are both explicit and implicit. One way
the web acts as a system of "shared responsibility" (Block et al., 2008, p. 380)
is in the development of quality products based on trust between various

partnerships. For example, increasing profits or sharing creative ideas might be the responsibility of retailers, suppliers, farmers, institutions, distributors, processors, and consumers. The other classification for value web models in this context refers more to "moral and credence values" (p. 380) like social justice or equity of access for all participants in the web. The W. K. Kellogg Foundation (2007) has funded local food systems from Oregon to Iowa that support "a safe and nutritious food supply grown in a manner that protects health and the environment and adds economic and social value to rural and urban communities."

Social workers have the opportunity to use their program development and evaluation skills to improve the quality and availability of healthy food. Interpersonal, brokering, and coalition-building skills can be used to facilitate communitywide discussions, build trustworthy relationships among people with diverse perspective, and mobilize community members.

Characteristics of the Ecological–Social Perspective

Interdependence. Social networks within the ecological–social environment are classified as symbiotic or commensalistic (Robbins et al., 2006). Robert Ezra Park of the Chicago Ecological School described symbiotic interdependence as "hostile or competitive" (Robbins et al., p. 33), yet "communicative and consensual interdependence" (Robbins et al., p. 33) is commensalistic. Within each of the food security models, inherent conflict exists based on both one's position within the network and the goals of the diverse players involved in the decision-making processes. Community food security interventionists must recognize competing interests and reach consensus concerning the community's goals through open communication processes.

Allen (1999) argued that community food security empowers people "to improve their community food production and access systems" (p. 119) in concrete "time and space that can be realized and seen" (p. 120). She stressed democratic participation from all networks of people, including city planners, food retailers, marketers, economic development officials, and consumers. Community food security models shift the system away from emphasizing production and economic efficiency toward food systems that are adaptable and resilient to ecological and socioeconomic conditions. Agrifood networks must build trust with one another and utilize embedded resources of relationships (Selfa & Quazi, 2005).

Diversity. Berkes et al. (2003) sought to understand the connectedness, context, and feedback of system components. They address the importance of interactions between diverse interest groups, in addition to the physical and social properties of the natural and built environments involved within the focal system. Energy needed in conventional and unconventional methods of growing and processing food, and outputs from those methods,

from profit to pollution, must be considered. Fossil fuels used in food trans-
portation, the nutrient-rich soil needed for growing fruits and vegetables,
the electricity required to run processing machines and refrigeration mecha-
nisms, and the indigenous agricultural knowledge are considered necessary
capital for community food security. Reliance upon an industrialized food
system has displaced regional farmers' practical skills and knowledge of food
production, increasing vulnerability, and decreasing biodiversity (Hightower,
1973; Wright, 2009).

Hart (2006) defined natural capital, human and social capital, and
built capital in her list of sustainable community indicators. Natural capi-
tal includes the nonrenewable and renewable resources of ecosystems that
support human life, the ability for the ecosystem to adapt and be resilient
to system changes, and the esthetic natural qualities in communities (Hart,
2006). Human or social capital includes the abilities, skills, and knowledge
of individuals within social networks and the extent to which those networks
interact in significant effective ways (Hart, 2006). Built capital includes infras-
tructure created by humans and technology (e.g., space for farmers' markets,
community gardens, food preservation classes). Hart included the ability of
communities to maintain built capital in her sustainability measures.

Vulnerability. It is important that dominant and vulnerable groups and
system components are identified so that areas of growth, development,
and potentialities can be assessed and included in the design of interven-
tions (Germain, 1979). The current status of the ecological–social systems
involved must be addressed. Groups must plan for the needs and capacities
of ecological–social systems characterized by external stress and planned or
natural succession that inevitably occur within the time and space in which
changes and strategies are implemented.

FOOD SECURITY AND THE ENVIRONMENT

Each food security model described considers the transactions between
people and their environments. Globalization and the industrialization of
food systems have shifted cultural, physical, and political boundaries,
creating stress on the natural environment and tensions between munic-
ipalities related to food production, food distribution, and food prices.
Friedmann and McMichael (1989) wrote that sectoral boundaries have been
blurred due to transnational shifts in agriculture. The creation of large-scale
agribusinesses requires dialogue to occur at the national and international
level.

According to Germain (1978), stress occurs when stimuli are "insuf-
ficient, excessive, or absent" (p. 542), creating crises in ecological–social
systems. Subsidy-dependent agricultural production systems and resource-
poor communities are examples of economic stressors. Ecological factors

include loss of heterogeneity within plant and animal species, which creates vulnerability to disease and natural or human-made disasters. Social workers need to consider both constructive and destructive changes in the ecological–social food system to reduce destructive components and encourage renewal and growth of sustainable food systems.

Historically, food security has been a key issue for nations around the world, as food is "the material basis to human survival" (McBeath & McBeath, 2009, p. 49). Floods, famines, droughts, disease, population growth, and climate change affect food security. Since the late 20th century, analysts have identified "pollution of arable land and water, insufficiency of water, deforestation, desertification, and over-fishing" (McBeath & McBeath, 2009, p. 50) as both contributors and effects of the "development, production, and distribution of food and its security" (p. 49).

Fossil Fuels

In the 1920s, farming practices began to be more automated, relying on the use of fuel-based equipment. This expanded after World War II, along with the increased use of pesticides developed from the growing petrochemical industry (Pfeiffer, 2006). Crop subsidy programs were promoted in the 1970's, resulting in "large-scale industrial agriculture" (Polack, Wood, & Bradley, 2008, p. 360). The increase of mono cropping, or the specialization and planting of homogenous crops, decreased the availability of diverse foods at local markets. During this period, transportation based on petroleum increased as distribution boundaries expanded and agribusinesses began producing commodities for national and emerging global markets.

Pirog and Benjamin (2003) used the Weighted Average Source Distance (WASD) as a means to calculate food miles by combining the distances traveled and the amount of food transported from production to point of sale, finding that non-locally grown produce traveled 27 times further than locally-grown produce (about 1,500 miles). The food system is likely to be disturbed and shift to an unstable state in the event of increases in fuel prices, because the modern food system is dependent upon fossil fuels (Polack et al., 2008).

Capacity for Diversity

Loss of arable land is an important concept both in the analyses of problems within the current food system, and as an intervening factor in community food systems models. Hoff and Polack (1993) pointed to large-scale corporate farming practices as major contributors to the loss of arable land in the United States. Demand for increased production and national policies supporting agribusiness have contributed to these practices that have "depleted water and topsoil" (Hoff & Polack, 1993, p. 206) and introduced a variety of pesticides and toxins into the ecological systems, of which water and food

supplies are a part. Additionally, loss of agricultural land could equate to economic losses, and low-incomes are directly related to food insecurity.

Research in China has shown that population increases, urbanization, and economic development have all added stress to the ecological food system, creating a vulnerable state (McBeath & McBeath, 2009). Population increases and consumer demands for larger houses and yards, shopping malls, and vast stretches of highways to ease transport of people and goods, each contribute to stress on food systems nested within the United States. In China, the same pattern has arisen, and economic developers have added to pressures on the system, by insisting that buildable land earns more money per acre when used for businesses like hotels, office buildings, restaurants, and resorts, rather than farming. Similar arguments happen in urban and rural areas, and as a result of suburbanization (Winne, 2008).

As a result of degradation of the land for industrial, commercial, and residential uses, "the ability to generate plant life and sustain human and animal life" (McBeath & McBeath, 2009, p. 55) in China and other countries has been jeopardized. Similarly, soil erosion, changes in the nutrient balances of soil, and pollution, have threatened land in the United States. Although erosion and changes in nutrient balances of soil are seen naturally occurring, human practices such as excessive use of chemical fertilizers have disturbed natural processes. Although nature adapts and responds to stress in resilient ways, too much stress in a particular space at a particular time can threaten the ecosystem's threshold, at which point, "the system can change rapidly and even catastrophically" (Berkes et al., 2003, p. 5).

Great concern exists for the loss of natural resources and the introduction of toxins into the food system at various entry points in terms of population health of humans, animals, and plants, and their interdependence for survival within the ecological–social system. Developers of sustainable community food security systems hope this model will improve the adaptive capacity for future generations, while simultaneously improving current processes that have the potential to create chaos. "Food derives from the natural world" (McMichael, 2005, p. 713) and environmentally damaging methods of food production evident in agribusiness and "materials-intensive processed foods" (p. 714) may limit the choice of healthy foods or shift areas back to Malthusian subsistence crises. Coupled with the current obesity epidemic, food insecurity presents a major public health crisis and threat to the ecological–social system.

Herbicides, Insecticides, and Fertilizers

Paarlberg and Paarlberg (2002) noted that synthetic nitrogen that was developed during World War I was used widely following Justus von Liebig's evidence that nitrogen, along with phosphate and potash, were critical chemicals needed to grow plants. Fertilizer application was widespread and

chemicals were introduced to kill undesired plant and animal infestations (Paarlberg & Paarlberg, 2002). The discovery of DDT (dichloro-diphenyl-trichloro-ethane) by Paul Müller in 1935, was thought to be a life-saving chemical, as WWII allies carried cans of it to protect themselves from insect-borne diseases (Paarlberg & Paarlberg, 2002). Between 1930 and 1954, pesticide shipments increased by $160 million, and DDT was widely used until it was banned in 1972, when it was found that DDT was detrimental to environmental and human health (Paarlberg & Paarlberg, 2002).

E. J. Kraus, a botanist from the University of Chicago, developed 2-D, an herbicide used to control many of the 18,000 weed species that 40 years ago caused as much damage as crop losses due to insects and diseases combined (Paarlberg & Paarlberg, 2002). By 1998, 90% of croplands devoted to corn, soybeans, spring wheat, and fall potatoes used herbicides, which, applied correctly, can reduce hill erosion by 80% because of the ability to permit tillage that does not disrupt the soil (Paarlberg & Paarlberg, 2002). Biologists created ready-roundup soybeans that were able to survive herbicide use, creating a niche market for herbicide companies to control both weed control and seed production. Once seeds were introduced that had been developed through "cross-breeding varieties" (Kasturi, 2009, p. 164), farmers no longer saved their seeds, but relied upon technically-advanced seeds with desirable characteristics like the ability to yield maximum crop outputs (Kasturi, 2009).

This use of biotechnology brought together farmers, seed, and fertilizer suppliers (Paarlberg & Paarlberg, 2002). Rogers (1983) recognized that innovations may be functional for a system, but conditions are unequal within the system. Citing that although miracle wheat and rice varieties reduced global food insecurity in places like India, it led to "fewer farmers, migration to urban slums, higher unemployment rates, and political instability" (Rogers, 1983, p. 381). Buttel (2005) stated that a series of Supreme Court decisions (see the Plant Variety Protection Act, 1970; Diamond v. Chakrabarty, 1980; ex parte Hibbard Patent and Trademark Office decision, 1985; ex parte Allen decision, 1987) allowed patenting of seeds that led to the development of "start-up companies" and "chemical-seed multinational corporations" (MNCs; (Buttel, 2005, p. 279), which are major components of the industrialized food system.

Pollution

Agricultural pesticide use has been linked to "cancer, birth defects, infant mortality, and respiratory illness" (Hoff & Polack, 1993, p. 205), and disproportionate risks exist for "farm workers, almost all of who are ethnic minorities" (Worldwatch, 1987, as cited in Hoff & Polack, 1993, p. 205). Pollution from industrial and chemical facilities, as well as mining operations

in many parts of the United States, have contaminated arable land, water, plants, and animal and fish species (McBeath & McBeath, 2009).

Steinfeld et al. (2006) stated that the animal agriculture sector emits more greenhouse gas emissions than the transportation sector. Pollution occurs as a result of mass quantities of animal feces and urine invading ecosystems, emitting odors that have created public health problems, and contaminating domestic wells with "high levels of nitrates from fertilizers and manure spills or leaks" (Humane Society of the United States, 2009). Community food security frameworks include industry professionals because environmental policies affecting these industries, must be incorporated to create a just, equitable, safe, healthy food system.

China is the third largest source of imported agriculture and seafood in the United States (Becker, 2008), a fact that highlights the importance of considering community food security systems in the context of a national and global food market. McBeath and McBeath (2009) reported that burning coal produces nearly 2,000 tons of mercury annually, polluting the soil and the food system. They continued to explain how "air-borne pollution particles have cut rainfall in some regions" (p. 60) and infected one-third of China's landmass with acid rain. Air pollution is linked with cancer, and is a major public health concern when consideration is made for the effect that air pollution has directly on agricultural land. Social workers must expand their concept of the environment to include members and processes within interacting ecological, biological, and social systems when addressing food security.

COMMUNITY FOOD SECURITY AS A SOCIAL DEVELOPMENT INTERVENTION

The ironic aspect of food security in the United States is the juxtaposition of pockets of distorted development in a country associated with economic development. Yet distorted development and, subsequently, food deserts exist when income disparities continue to widen. Food deserts exist in low-income areas with limited access to affordable and healthy food (Paez, Mercado, Farber, Morency, & Roorda, 2009). Community food security interventions seek to increase resiliency to absorb the shocks and perturbations of the ecological–social systems related to economic, environmental, or social issues.

The United States Census (DeNavas-Walt, Proctor, & Smith, 2009) reported that 13.2% of the population (39.8 million people) was considered at or below the poverty line in 2008, which is the highest US poverty rate since 1959. Even more alarming are the poverty rates for members of the Hispanic population (23.2%) and for African Americans (24.7%). Poverty

has been linked to food insecurity, so increased poverty rates and disparities are of utmost concern for social workers. Furthermore, food insecurity, in terms of poor dietary intake often due to lack of access to affordable nutrient-rich foods, as well as malnourishment, is a concern when over 15% of the population has no health insurance coverage (DeNavas-Walt et al., 2009).

Defining Social Development

Midgley (1995) described social development as a process of planned social change designed to promote the well-being of the population in conjunction with a dynamic process of economic development. Distributive properties of social development theory focus on social equity between groups. Community participation from a diverse group of stakeholders aims at making structural changes to improve underlying economic and institutional problems.

Social development uses the ecological systems perspective and relies on utilizing social capital. At the individualist level, people focus on their contributing behaviors to social problems. Collectivist ideologies emphasize coalition-building and social cohesion at the organizational and group level; populist ideologies extend activities to small communities. Embedded in each system level are resources and linkages from a wide range of disciplines. Social developers evaluate processes in terms of systems that promote sustainable economic, environmental, and social justice interactions between the social and ecological environments.

Community Food Security Intervention Strategies

WHY (2009), an organization devoted to addressing poverty and hungry through creative community-level interventions, outlines explicit community food security goals that strive for social welfare for the greatest number of people. The WHY goals recognize the connections between people and their natural environments, emphasizing identification of natural, human, and cultural capital within different system levels. Community food systems seek economic, social, community, and public health improvements. Social work practitioners and researchers have opportunities to determine barriers to these goals, to evaluate social network linkages, and to predict whether program components effectively improve community food security.

The WHY goals include: meeting community-wide food needs, specifically targeting vulnerable populations; promoting nutrition and health; revitalizing communities and encouraging self-reliance; participating in creative economic development; supporting local and regional agriculture production; strengthening linkages between consumer and producers; promoting sustainable livelihoods, living wages, and good working conditions for farmers and food system workers; encouraging small-scale farming and

sustainable agricultural practices; and focusing on diverse cultures and traditions of community members (WHY, 2009).

CSA

Winne (2008) wrote that over 2,000 CSAs are being operated in North America. CSAs rely upon relationships that are intended to be beneficial for both consumers and farmers. Consumers buy a share of the harvest prior to the start of each growing season and share in any risks (such as insect infestation or droughts) with farmers. Each week, consumers receive seasonal products. The challenge for low-income people is that governmental assistance (SNAP, WIC) cannot be used to purchase produce because money directly purchases shares, not food. Low-income people may have a problem coming up with the large sum of money at one time.

Social workers can work with farmers to determine how to increase access to nutritional foods for low-income families. This may mean addressing accessible locations where shares of food are picked up, encouraging planting of culturally specific foods, or encouraging donations of extra produce to food pantries or soup kitchens.

Farmers' Markets

Farmers' markets were developed in the 1970s in urban areas around the United States. The original purpose of farmers' markets was to connect consumers with producers and provide accessible, affordable fresh foods to communities where few supermarkets existed and consumers were more likely to access affordable fast food. Farmers' markets have expanded beyond urban areas to 5,274 locations (USDA, n.d.). "The USDA estimates that between 30,000 and 50,000 farmers currently sell [goods] at farmers' markets" (Winne, 2008, p. 39).

Social workers need to provide leadership in communities and groups that are not currently participating in farmers' markets voucher programs through WIC, SNAP and the Seniors' Farmers' Market Nutrition Program. Ver Ploeg et al. (2009) noted that in 2008, 753 farmers' markets were authorized to accept SNAP dollars, meaning that only 14.28% of farmers' markets have the ability to serve SNAP users.

Social workers are challenged to educate families who receive WIC or SNAP about using vouchers at their farmers' markets. Kamphuis et al. (2006) suggested that although low-income populations are as likely to consume the daily recommendations of fruits and vegetables when compared with higher income populations, research suggests that local availability and improved opportunities for access to fruit and vegetables improved dietary consumption patterns. Markets often donate excess produce to feeding programs and promote cultural heritage (WHY, 2009).

Community Gardens

Community gardens have "some sense of a public garden in terms of ownership, access, and degree of democratic control" (Ferris, Norman, & Sempik, 2001, p. 560). They have been employed to create green and open spaces, to revitalize communities, to provide leisure activities, and to provide affordable food for communities. Ferris et al. stressed the importance of research on the effectiveness of community gardens created to increase fruit and vegetable consumption and improve health outcomes.

Several innovative gardens have been developed that promote social, economic, and environmental justice. The Swannanoa (NC) Correctional Center for Women developed a community garden, which provides fresh crops used in meal preparation and opportunities for both therapeutic and community pride-building activities (D. Hughes, personal communication, August 15, 2008). The Veteran's Restoration Quarters and Transitional Housing in Asheville, North Carolina, created a massive organic three-season garden. One veteran received a scholarship to attend an organic growing school, another veteran teaches cooking classes to other veterans, and many tend the garden. All of the food is either used in the three meals prepared each day at the shelter or sold at tailgate markets, providing a sustainable funding stream for the garden (Asheville Buncombe Community Christian Ministry, 2010; B. Durham, personal communication, April 8, 2009).

Community Food Assessments (CFA)

Social workers have the tools to use CFAs as community organizing tools. CFAs are used to define food-related issues, plan strategies for change, and gather support from a wide variety of community members (Jacobson, 2007). These assessments combine community organizing, community development, research, coalition building, advocacy, and policy-making. The process and outcomes may be measured to identify challenges to accessibility or mobility of resources within and among social networks.

CONCLUSION

Addressing food insecurity is challenging because of the plethora of groups involved, the competing interests of those groups, and the feasibility of creating changes within complex global food systems. The idea of community food security is both a framework and an intervention strategy to address interrelated social, economic, and environmental issues. The key to community food security is equitable access to healthy foods grown in a sustainable, environmentally friendly way. As a social development intervention, it can be a solution to economic development, and equitable resource distribution.

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