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Rationale and design for the community activation for prevention study (CAPs): A randomized controlled trial of community gardening

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ABSTRACT

Background: Engaging in health-promoting behaviors (e.g., healthy fruit- and vegetable-rich diet, physical activity) and living in supportive social and built environments are consistently and significantly associated with reductions in cancer, heart disease, diabetes, and other chronic diseases. Interventions to change diet and physical activity behaviors should aim to educate individuals, change the environments in which people live, work and recreate, improve access, availability, and affordability of healthy foods, and create safe places the facilitate active lifestyles. This trial will assess whether community gardening increases fruit and vegetable consumption and physical activity, improves social support and mental health, and reduces age-associated weight gain and sedentary time among a multi-ethnic, mixed-income population.

Methods/design: A randomized controlled trial of community gardening began in Denver, Colorado in January 2017. Over 3 years, we will recruit 312 consenting participants on Denver Urban Gardens' waitlists and randomize them to garden or remain on the waitlist. At baseline (pre-gardening), harvest time, and post-intervention, study participants will complete three 24-hour dietary recalls, a 7-day activity monitoring period using accelerometry, a health interview and physical anthropometry.

Discussion: This project addresses health-promoting behaviors among a multi-ethnic, mixed-income adult population in a large metropolitan area. If successful, this trial will provide evidence that community gardening supports and sustains healthy and active lifestyles, which can reduce risk of cancer and other chronic diseases.

Trial registration: ClinicalTrials.gov, ID: NCT03089177: Registered on 03/17/17.

1. Background

Improving diets, increasing physical activity, and reducing sedentary time are critical for the primary and secondary prevention of chronic diseases such as obesity, cancer, heart disease, and diabetes, and promoting health more generally [1,2]. Moreover, half of adults in the United States have at least one chronic condition and over a quarter of Americans adults have two or more conditions [3]. Consequently, these chronic conditions are the main drivers of disease, disability, and health care costs in the United States. The American Cancer Society and others consistently report that, in addition to smoking cessation, socioeconomic disadvantage, access to fruits and vegetables, and access to supportive environments for physical activity are critical areas for reducing cancer risk [4] and for improving survival [5–14]. People of color living in communities with higher levels of poverty (> 30%) experience neighborhood conditions that can negatively affect their likelihood to engage in health promoting behaviors and overall health status [15,16]. This is due, in part, to exposure to health-compromising conditions such as lack of access to healthy food and outdoor activity spaces [16–24]. Additionally, people who perceive their neighborhoods as unsafe and aesthetically unpleasing report greater levels of stress [25] and poorer sleep quality [26]. In turn, individuals who report high

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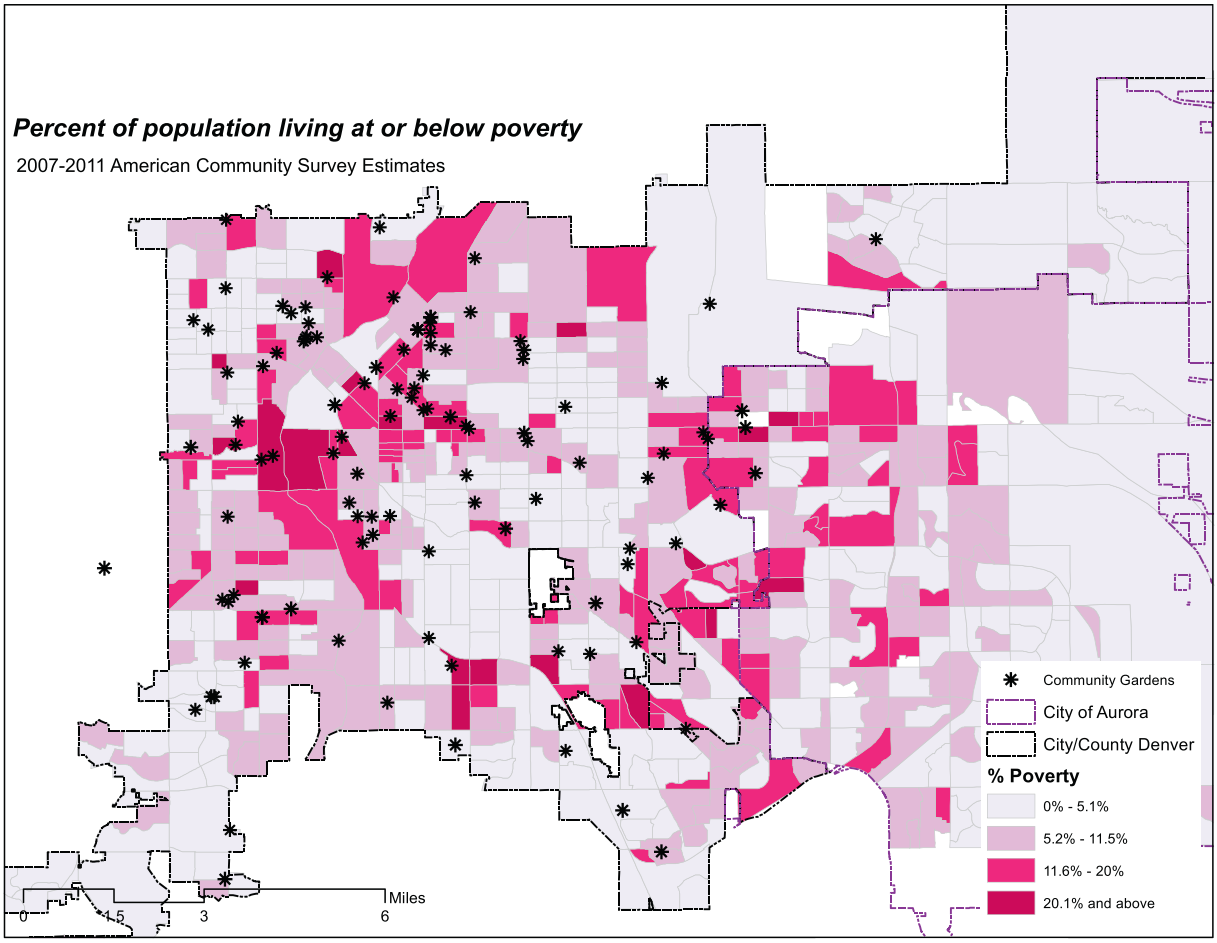

Fig. 1. Community gardens and socioeconomic measures (Denver and Aurora by Block Group) Percent of population living at or below poverty 2007–2011 American Community Survey Estimates.

stress are less likely to engage in healthy behaviors such as physical activity and healthy eating [27].

Given the burden of cancer and other chronic diseases and the costs that could be prevented by changes in health-promoting behaviors, a primary goal in chronic disease prevention is to identify interventions that are sensitive to social, cultural, and economic factors and encourage all people to make healthy lifestyle choices that reduce their risk of chronic disease [28–30]. Addressing health behavior change require theory-informed, socio-ecological approaches that are sensitive to cultural preferences and diverse social contexts [29].

Community gardens, defined as green spaces where individuals from more than one family grow food communally or side-by-side, are an example of an environmental and social intervention at the neighborhood level. Across North America and beyond, municipalities are experiencing a renewed interest from residents to grow food themselves in their own communities. Yet, in an era of increasingly constrained budgets for public amenities, local governments are weighing the costs and benefits of such an investment with other community priorities. Current evidence about the effectiveness of gardens in promoting health and wellbeing among adults is based largely on results from qualitative and cross-sectional studies [31,32]. Past studies have shown that community gardeners eat fruits and vegetables more often [33,34] and report lower body mass index (BMI) [35,36]. Gardeners engage in more physical activity than non-gardeners [37,38]. The effect on fruit and vegetable consumption is partially explained by the finding that gardeners are more socially involved and feel more social support than non-gardeners [33,34,39,40].

The aim of this report is to describe the design of a randomized controlled trial to test the effects of community gardening on diet and physical activity behaviors, weight status, waist circumference, and the mechanisms by which these changes may occur. We hypothesize that community gardens represent a place-based social and environmental strategy for reducing cancer risk through increasing health-promoting behaviors. Our randomized controlled trial of community gardening takes advantage of a community setting to rigorously test our hypothesis. This trial will allow us to study cancer and chronic disease risk reduction strategies in mixed income, multi-ethnic populations.

2. Methods/design

2.1. Study design and objectives

A randomized controlled trial of community gardening began in January 2017 at the University of Colorado (ClinicalTrials.gov, ID: NCT03089177) in partnership with Michigan State University, the University of South Carolina, and Colorado State University. The study protocol was reviewed and approved by the University of Colorado Boulder Human Subjects Institutional Review Board (Protocol # 16-0644). The purpose of this study is to evaluate whether community gardening increases fruit and vegetable consumption, physical activity and social support, and reduces age-associated weight gain, and sedentary time among a multi-ethnic, low-income population of adults from before gardening to two follow-up time points: harvest and nine-month follow up. The secondary outcomes of interest include anxiety, perceived stress, and general well-being. We will conduct mediation analyses in order to assess how factors, such as self-efficacy, perceived