Contemporary Clinical Trials 47 (2016) 22–31

Contents lists available at ScienceDirect

Contemporary Clinical Trials

journal homepage: www.elsevier.com/locate/conclintrial

Healthy immigrant families: Participatory development and baseline characteristics of a community-based physical activity and nutrition intervention

Mark L. Wieland [a,*], Jennifer A. Weis [b], Marcelo M.K. Hanza [c], Sonja J. Meiers [j], Christi A. Patten [e], Matthew M. Clark [e], Jeff A. Sloan [f], Paul J. Novotny [f], Jane W. Njeru [a], Adeline Abbenyi [g], James A. Levine [i], Miriam Goodson [k], Maria Graciela D. Porraz Capetillo [h], Ahmed Osman [l], Abdullah Hared [l], Julie A. Nigon [m], Irene G. Sia [d]

[a] Division of Primary Care Internal Medicine, Mayo Clinic, Rochester, Minnesota, United States
[b] Center for Clinical and Translational Science, Mayo Clinic, Rochester, Minnesota, United States
[c] Department of Research Administration, Mayo Clinic, Rochester, Minnesota, United States
[d] Division of Infectious Diseases, Mayo Clinic, Rochester, Minnesota, United States
[e] Department of Psychiatry and Psychology, Mayo Clinic, Rochester, Minnesota, United States
[f] Division of Biomedical Statistics and Informatics, Mayo Clinic, Rochester, Minnesota, United States
[g] Division of Clinical Microbiology, Mayo Clinic, Rochester, Minnesota, United States
[h] Language Services, Mayo Clinic, Rochester, Minnesota, United States
[i] Division of Endocrinology, Mayo Clinic, Scottsdale, Arizona, United States
[j] Department of Nursing, Winona State University, Rochester, Minnesota, United States
[k] Alliance of Chicanos, Hispanics, and Latin Americans, Rochester, Minnesota, United States
[l] Somali Community Resettlement Services, Rochester, Minnesota, United States
[m] Hawthorne Education Center, Rochester, Minnesota, United States

ARTICLE INFO

Article history:
Received 8 September 2015
Received in revised form 25 November 2015
Accepted 3 December 2015
Available online 4 December 2015

Keywords:
Community-based participatory research
Dietary quality
Immigrant refugee health
Physical activity

ABSTRACT

Background: US immigrants often have escalating cardiovascular risk. Barriers to optimal physical activity and diet have a significant role in this risk accumulation.
Methods: We developed a physical activity and nutrition intervention with immigrant and refugee families through a community-based participatory research approach. Work groups of community members and health scientists developed an intervention manual with 12 content modules that were based on social-learning theory. Family health promoters from the participating communities (Hispanic, Somali, Sudanese) were trained to deliver the intervention through 12 home visits during the first 6 months and up to 12 phone calls during the second 6 months. The intervention was tested through a randomized community-based trial with a delayed-intervention control group, with measurements at baseline, 6, 12, and 24 months. Primary measurements included accelerometer-based assessment of physical activity and 24-hour dietary recall. Secondary measures included biometrics and theory-based instruments.
Results: One hundred fifty-one individuals (81 adolescents, 70 adults; 44 families) were randomized. At baseline, mean (SD) time spent in moderate-to-vigorous physical activity was 64.7 (30.2) minutes/day for adolescents and 43.1 (35.4) minutes/day for adults. Moderate dietary quality was observed in both age groups. Biometric measures showed that 45.7% of adolescents and 80.0% of adults were overweight or obese. Moderate levels of self-efficacy and social support were reported for physical activity and nutrition.
Discussion: Processes and products from this program are relevant to other communities aiming to reduce cardiovascular risk and negative health behaviors among immigrants and refugees.
Trial registration: This trial was registered at Clinicaltrials.gov (NCT01952808).

1. Introduction

Immigrants and their descendants are expected to account for most of the US population growth in the coming decades [1], and children of foreign-born individuals—20% of US children—represent the nation's most rapidly growing demographic [2]. When immigrant and refugee

Abbreviations: BMI, body mass index; CBPR, community-based participatory research; FHP, family health promoters; HEC, Hawthorne Education Center; HIF, healthy immigrant families; RHCP, Rochester Healthy Community Partnership; SCT, social cognitive (learning) theory.

* Corresponding author at: Division of Primary Care Internal Medicine, Mayo Clinic, 200 First St SW, Rochester, MN 55905, United States.
E-mail address: wieland.mark@mayo.edu (M.L. Wieland).

http://dx.doi.org/10.1016/j.cct.2015.12.004
1551-7144/

populations arrive in the United States, they are, across many measures, healthier than the general population [3]. However, the longer immigrant groups reside in North America, the more they approximate the cardiovascular risk profiles of the general population, including high rates of obesity [4], hyperlipidemia [5], hypertension [6], diabetes mellitus [7], and cardiovascular disease [8]. With increasing duration of residence, children of immigrants may have even greater risk of the development of obesity and associated complications than those who arrived as adults [9].

In general population samples, low levels of physical activity and unhealthful dietary behaviors are associated with each of the cardiovascular disease risks stated above [10]. In high-income nations, physical activity levels and dietary behaviors of immigrant and refugee populations are less healthy than those of the nonimmigrant majority populations [11–13]. Therefore, interventions to increase physical activity and improve nutrition within the first decade after immigration may be especially helpful [4]. Health care professionals and community leaders have called for interventions, tailored to immigrant and refugee populations [14], that address physical activity and nutrition; however, few have been reported [1].

One difficulty in designing interventions to promote physical activity and healthful nutrition is that the reasons underlying suboptimal behaviors among immigrant and refugee populations are multiple, complex, and poorly understood [15,16]. Heterogenous impacts of acculturation, socioeconomic position, and health literacy (among other factors) on health behaviors within these communities highlight this complexity [17,18]. Community-based participatory research (CBPR) is defined as an investigation of health issues within a community, in which community and academic members equitably collaborate through all phases of the research and programming processes [19]. As stated by Tiedje et al. [20], "This is an approach to research that is particularly well suited to intervention work that addresses the interplay between health behaviors and the social determinants of health because it empowers communities, promotes understanding of culturally pertinent issues, and targets multifaceted barriers to health." Furthermore, CBPR appears to be an effective means of approaching health topics with immigrant and refugee populations [21,22].

In 2004, a community-academic partnership developed between Mayo Clinic (a large academic medical center) and Hawthorne Education Center (HEC; an adult education center) to address a health priority of HEC learners and staff. HEC serves approximately 2000 immigrants and refugees per year through coursework, connection to community resources, and a health clinic. As previously described [20], from 2005 to 2007, this partnership formalized operating norms, adapted CBPR principles, and added many dedicated community and academic partners, forming the Rochester Healthy Community Partnership (RHCP).

The mission of RHCP is "to promote health and well-being among the Rochester population through community-based participatory research, education, and civic engagement to achieve good health for all" [23]. Since its inception, RHCP has matured, developed a community-based research infrastructure [24], and become productive and experienced at deploying data-driven assessments and interventions with immigrant and refugee populations [25,26]. Community and academic partners conduct all phases of research together, including joint dissemination of research results at community forums and academic meetings.

The goal of this project was to build on past experiences of this established CBPR partnership to systematically develop and evaluate a sustainable, socioculturally appropriate physical activity and nutrition intervention with and for immigrant and refugee families in Rochester, Minnesota. The aim of this paper is to report the participatory development of the intervention, study design, and baseline characteristics of the study participants.

2. Methods

The study was approved by the Mayo Clinic Institutional Review Board and by the Rochester Public School District on behalf of the community. This trial was registered at Clinicaltrials.gov (NCT01952808).

2.1. Study setting and participants

Rochester, Minnesota, is a small metropolitan area in the southeastern part of the state. According to 2007–2011 American Community Survey estimates, 14,172 foreign-born residents live in the metro area. The healthy immigrant families (HIF) project included partners from the Hispanic, Somali, and Sudanese communities in Rochester.

2.2. Intervention development

2.2.1. Formative research

The intervention was developed on the basis of formative research conducted by the study team to elucidate barriers and promoters of sustainable, healthful levels of physical activity and nutrition after immigration to the United States, at both the individual and family levels. Sixteen focus groups were conducted in 2012; participants were from local immigrant communities and included 127 adults and adolescents stratified by age, gender, and ethnicity. RHCP community partners participated in focus group moderation and qualitative analysis. Results for physical activity [27] and nutrition [20] are reported elsewhere.

In brief, the focus groups found striking similarities in barriers and promoters of physical activity among the heterogeneous participants, suggesting that the shared experiences of immigration and related socioeconomic and linguistic factors markedly influenced understanding, conceptualization, and practice of physical activity. The biggest barriers to initiating physical activity were low levels of familiarity and comfort with exercise facilities and opportunities, but participants were motivated to engage in physical activity when receiving social support from family, friends, and communities [27]. For nutrition, results from the focus groups found that "personal, structural, and societal/cultural factors influence meanings of food and dietary practices across immigrant and refugee populations… [and] that cultural factors are not fixed variables that occur independently from the contexts in which they are embedded" [20]. Additionally, family and community-focused approaches to incorporating these factors may be valuable for informing health-promoting practices [20].

2.2.2. Theoretical framework

Social cognitive (learning) theory [28] (SCT) was the conceptual basis for the intervention. This theory recognizes the interplay of individual factors (e.g., self-efficacy to become physically active) and social environmental factors (e.g., social support) on health behavior change. Self-efficacy has been postulated to be an influential cognitive mechanism mediating behavioral change [28]. Low self-efficacy is an influential determinant of inactivity [29], and it is associated with a lack of success at eating a healthful diet [30,31]. Likewise, a socially supportive family environment has an important influence on physical activity in general populations [32] and among families of low socioeconomic position [33]. Other key constructs of SCT are outcome expectations or the consequences of enhanced physical activity and nutrition (e.g., weight loss) [34]. Finally, SCT addresses social reinforcers, which can provide more powerful and immediate motivation for enhanced physical activity and nutrition [35].

2.2.3. Participatory intervention work groups

An RHCP HIF grant proposal—writing group was established to develop an intervention within our theoretical framework that aimed to improve physical activity and healthful eating among immigrant and refugee families. The 16 members consisted of academic and community partners from each participating immigrant group; members were