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Community-wide physical activity intervention based on the Japanese physical activity guidelines for adults: A non-randomized controlled trial

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ABSTRACT

Very few community intervention studies that promote physical activity (PA) using guidelines and its dissemination and implementation have been conducted. Consequently, we evaluated the effectiveness of a community-wide intervention (CWI) of PA with adults based on the Japanese guidelines for promoting PA.

This was a non-randomized controlled trial, with four administrative districts in Fujisawa city assigned to the intervention group and nine to the control group. The CWI, conducted from 2013 to 2015, comprised information dissemination, education, and community support. The primary outcome was change in PA participation. Secondary outcomes were CWI awareness and PA guideline knowledge. Outcomes were assessed using questionnaires distributed to two independent, random samples of 3000 community-based adults (aged ≥ 20 years).

Two separate samples—1230 adults at baseline and 1393 at the two-year follow-up—responded to the survey. The median time spent in PA did not differ between intervention and control groups after adjusting for potential confounders (adjusted difference between groups = −0.02 min/day [95% confidence interval (CI): −0.11, 0.10]). However, intervention group participants were more aware of the CWI (33.8%) than were control group participants (25.2%) at the two-year follow-up (odds ratio = 1.44 [95% CI: 1.06, 1.95]). A significant difference was also observed in participants' PA guideline knowledge (adjusted difference between groups = 0.82% [95% CI: 0.33, 1.31]).

Although significant differences in awareness and knowledge were observed between groups, this CWI did not change PA levels over two years. Future studies should investigate the long-term effects of CWIs beyond two years.

Trial registration number: UMIN-CTR UMIN000018389.

1. Introduction

Regular physical activity (PA) is beneficial to health (U.S. Department of Health and Human Services, 2008; World Health Organization, 2010); however, insufficient PA is globally prevalent (Hallal et al., 2012; Lee et al., 2012). Evidence for community-level PA promotion is limited compared to evidence on PA promotion aimed at individuals (Baker et al., 2011, 2015).

Abbreviations: ANCOVA, analysis of covariance; BMI, body mass index; CI, confidence interval; CWIs, community-wide interventions; MVPA, moderate-to-vigorous intensity physical activity; PA, physical activity

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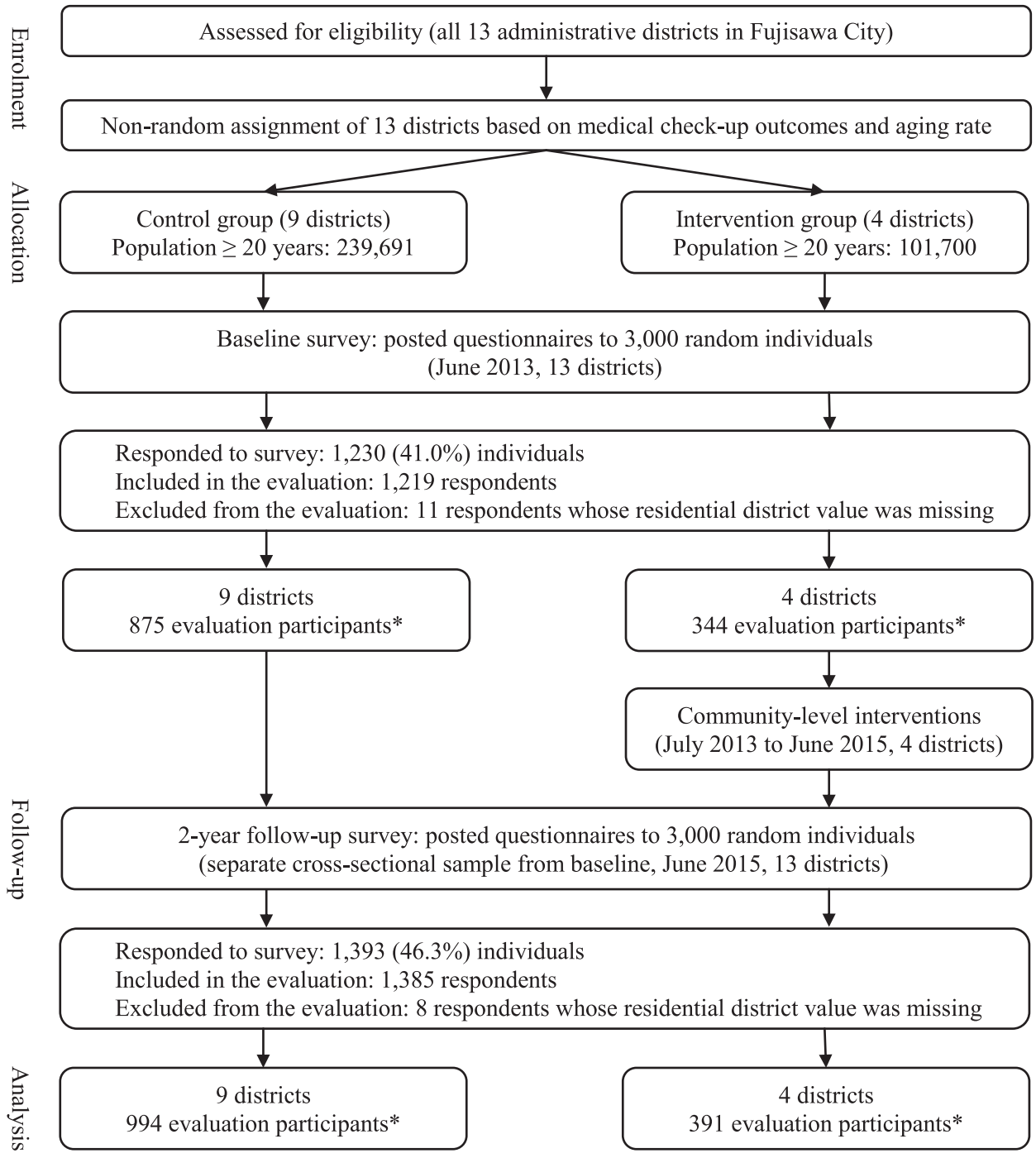

Fig. 1. Flow diagram of the trial process.
*Included in the analysis (separate cross-sectional samples) Fujisawa, Japan 2013–2015.

Since the adoption of PA is influenced by factors at various levels, e.g., individual, inter-individual, organization, municipality, and public policy (Bauman et al., 2012; Sallis et al., 2006), a multiple-pronged intervention, e.g., community-wide interventions (CWIs), is desired. CWIs typically [1] involve many community sectors; [2] include highly visible, broad-based, multi-component strategies; and [3] may also address other cardiovascular disease risk factors (Kahn et al., 2002).

However, a recent review of 33 studies on CWIs by Baker and colleagues found that the evidence for such an intervention is limited (Baker et al., 2015). In this review, CWI was defined as having at least two of the six broad strategies aimed at PA: [1] utilization of social marketing, [2] other communication strategies, [3] individual counselling, [4] working with multiple organizations, [5] working within specific settings, and [6] environmental change strategies. Especially in recent multi-strategic CWIs involving three or more of the components above and a minimal risk of bias, they failed to achieve population-level increases in PA (Kamada et al., 2015; Kamada et al., 2013; Phillips et al., 2014; Solomon et al., 2014; Wilson et al., 2015).

In Japan, Kamada and colleagues conducted a cluster randomized trial with the community as a unit of randomization, and middle-aged and elderly as the target population. They found that a one-year CWI improved the awareness and knowledge of PA efficacy (Kamada et al., 2013), and an evaluation three years later showed improvement in the rate of stretching exercises alone (Kamada et al., 2015).