Community wide interventions for increasing physical activity

Baker Philip RA, Francis Daniel P, Soares Jesus, Weightman Alison L, Foster Charles

Authors' objectives

Background: Multi-strategic community wide interventions for physical activity are increasingly popular but their ability to achieve population level improvements is unknown. Objectives: To evaluate the effects of community wide, multi-strategic interventions upon population levels of physical activity. Search methods: We searched the Cochrane Public Health Group Segment of the Cochrane Register of Studies, The Cochrane Library, MEDLINE, MEDLINE in Process, EMBASE, CINAHL, LILACS, PsycINFO, ASSIA, the British Nursing Index, Chinese CNKI databases, EPPI Centre (DoPHER, TRoPHI), ERIC, HMIC, Sociological Abstracts, SPORTDiscus, Transport Database and Web of Science (Science Citation Index, Social Sciences Citation Index, Conference Proceedings Citation Index). We also scanned websites of the EU Platform on Diet, Physical Activity and Health; Health-Evidence.org; the International Union for Health Promotion and Education; the NIHR Coordinating Centre for Health Technology (NCHTA); the US Centre for Disease Control and Prevention (CDC) and NICE and SIGN guidelines. Reference lists of all relevant systematic reviews, guidelines and primary studies were searched and we contacted experts in the field. The searches were updated to 16 January 2014, unrestricted by language or publication status. Selection criteria: Cluster randomised controlled trials, randomised controlled trials, quasi-experimental designs which used a control population for comparison, interrupted time-series studies, and prospective controlled cohort studies were included. Only studies with a minimum six-month follow up from the start of the intervention to measurement of outcomes were included. Community wide interventions had to comprise at least two broad strategies aimed at physical activity for the whole population. Studies which randomised individuals from the same community were excluded. Data collection and analysis: At least two review authors independently extracted the data and assessed the risk of bias. Each study was assessed for the setting, the number of included components and their intensity. The primary outcome measures were grouped according to whether they were dichotomous (per cent physically active, per cent physically active during leisure time, and per cent physically inactive) or continuous (leisure time physical activity time (time spent)), walking (time spent), energy expenditure (as metabolic equivalents or METS)). For dichotomous measures we calculated the unadjusted and adjusted risk difference, and the unadjusted and adjusted relative risk. For continuous measures we calculated percentage change from baseline, unadjusted and adjusted. Main results: After the selection process had been completed, 33 studies were included. A total of 267 communities were included in the review (populations between 500 and 1.9 million). Of the included studies, 25 were set in high income countries and eight were in low income countries. The interventions varied by the number of strategies included and their intensity. Almost all of the interventions included a component of building partnerships with local governments or non-governmental organisations (NGOs) (29 studies). None of the studies provided results by socio-economic disadvantage or other markers of equity. However, of those included studies undertaken in high income countries, 14 studies were described as being provided to deprived, disadvantaged or low socio-economic communities. Nineteen studies were identified as having a high risk of bias, 10 studies were unclear, and four studies had a low risk of bias. Selection bias was a major concern with these studies, with only five studies using randomisation to allocate communities. Four studies were judged as being at low risk of selection bias although 19 studies were considered to have an unclear risk of bias. Twelve studies had a high risk of detection bias, 13 an unclear risk and four a low risk of bias. Generally, the better designed studies showed no improvement in the primary outcome measure of physical activity at a population level. All four of the newly included, and judged to be at low risk of bias, studies (conducted in Japan, United Kingdom and USA) used randomisation to allocate the intervention to the communities. Three studies used a cluster randomised design and one study used a stepped wedge design. The approach to measuring the primary outcome of physical activity was better in these four studies than in many of the earlier studies. One study obtained objective population representative measurements of physical activity by accelerometers, while the remaining three low-risk studies used validated self-reported measures. The study using accelerometry, conducted in low income, high crime communities of USA, emphasised social marketing, partnership with police and environmental improvements. No change in the seven-day average daily minutes of moderate to vigorous physical activity was observed during the two years of operation. Some program level effect was observed with more people walking in the intervention community, however this result was not evident in the whole community. Similarly, the two studies conducted in the United Kingdom (one in rural villages and the other in urban London; both using communication, partnership and environmental strategies) found no improvement in the mean levels of energy expenditure per person per week, measured from one to four years from baseline. None of the three
low risk studies reporting a dichotomous outcome of physical activity found improvements associated with the intervention. Overall, there was a noticeable absence of reporting of benefit in physical activity for community wide interventions in the included studies. However, as a group, the interventions undertaken in China appeared to have the greatest possibility of success with high participation rates reported. Reporting bias was evident with two studies failing to report physical activity measured at follow up. No adverse events were reported. The data pertaining to cost and sustainability of the interventions were limited and varied.

Authors’ conclusions: Although numerous studies have been undertaken, there is a noticeable inconsistency of the findings in the available studies and this is confounded by serious methodological issues within the included studies. The body of evidence in this review does not support the hypothesis that the multi-component community wide interventions studied effectively increased physical activity for the population, although some studies with environmental components observed more people walking.


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