Worksite health promotion programs with environmental changes: a systematic review

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CRD summary
This review assessed the effectiveness of worksite health promotion programmes, including environmental modification, on physical activity, dietary intake and health risk indicators. The authors concluded that there was evidence that worksite health promotion programmes can influence dietary intake, but further research is required. The conclusions do not adequately reflect the limitations of results based on self-reported outcomes.

Authors’ objectives
To assess the effectiveness of worksite health promotion programmes (WHPPs) that include modifications of the environment on physical activity, dietary intake and health risk indicators.

Searching
MEDLINE and EMBASE were searched from 1985 to January 2004 for peer-reviewed studies published in English, German or Dutch, using the reported search terms. The reference lists of selected studies were screened.

Study selection

Study designs of evaluations included in the review
The inclusion criteria stated that randomised controlled trials (RCTs) were eligible for inclusion; however, controlled clinical trials (CCTs) were also included. The unit of randomisation of the included studies was the workplace. The duration of follow-up ranged from 3 months to 2.5 years.

Specific interventions included in the review
Studies of environmental modification of the worksite or company canteen were eligible for inclusion. All of the included studies used multi-component interventions (including education, counselling, incentives, information, change in smoking policy and family counselling) and all used environmental modification to encourage healthy eating, targeting dietary intake of fruit, vegetables, fat and fibre. Most studies targeted lifestyle factors to reduce cancer; others aimed to reduce cardiovascular risks and cholesterol levels, or to promote a general healthy lifestyle or to increase physical activity. Most of the studies used multiple sites, with an average of 20 worksites per study (range: 2 to 111). Details of all included interventions were reported.

Participants included in the review
Studies targeting healthy workers or employees were eligible for inclusion. The primary studies included blue- and white-collar workers in a variety of industries (details were reported).

Outcomes assessed in the review
Studies that assessed physical activity, dietary intake, or health risk indicators such as body mass index (BMI), blood-pressure, serum cholesterol level and percentage body fat, were eligible for inclusion. All of the included studies used a self-reported questionnaire to assess changes in dietary intake.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected the studies.

Assessment of study quality
The studies were assessed using the following criteria adapted from those described by the Cochrane Back Review Group:

- internal validity/study design (randomisation method, comparability of companies, comparability of study groups,
timing of measurement, blinding of outcome assessment and outcome); 

descriptive criteria (eligibility criteria, baseline characteristics, company characteristics, intervention and follow-up for 6 months or more); and 

analysis (confounders and use of intention-to-treat analysis).

Studies scoring 4 or more out of 7 for internal validity were considered to be (relatively) high quality. Two reviewers independently assessed validity and resolved any disagreements by consensus.

**Data extraction**
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Results data for each study were extracted.

**Methods of synthesis**
How were the studies combined?
The studies were grouped by outcome targeted (physical activity, diet or health risk indicators) and combined in a narrative. Each study was described in the text, with additional descriptive information tabulated.

How were differences between studies investigated?
Some differences were discussed in the text and others were reported in the accompanying tables.

The level of evidence for interventions on diet, physical activity and serum cholesterol was graded using a hierarchy of evidence:

- strong evidence came from at least 2 high-quality RCTs reporting consistent significant results;
- moderate evidence corresponded to consistent results from one high-quality RCT plus at least one low-quality RCT plus at least one high-quality CCT;
- limited evidence corresponded to consistent results from one high-quality RCT plus at least one low-quality CCT or more than one low-quality RCT or more than one high-quality CCT;
- evidence was considered inconclusive where there was only one study, or multiple low-quality studies, or the results were contradictory;
- no evidence referred to the instance where more than one study with consistent results showed no significant effects of treatment or there were no results.

**Results of the review**
Thirteen trials (11 RCTs and 2 CCTs) were included. It was not possible to calculate the number of participants due to the overlapping populations in some of the individual studies and the fact that exact numbers were not reported for all studies.

Four studies were considered to be of a high quality. Methodological limitations of the individual studies included the lack of a blinded outcome assessment, poor quality of the outcome measures (mostly assessed using self-report), and inadequate description of company characteristics. Only one study described the method of randomisation.

Physical activity (3 studies).

There was inconclusive evidence about the effects of WHPPs with environmental modification on physical activity from 3 low-quality studies. The results were mixed: one study found no significant difference from the provision of a
walking track, a second found a significant increase in self-reported exercise with a Working-Well Programme, and the third found a significant increase in self-reported exercise in both the intervention and control groups.

Diet (13 studies).

There was strong evidence about the effects of WHPPs with environmental modification on the intake of fruit, vegetables and fat. All 6 studies (including 3 relatively high-quality studies) assessing self-reported intake of fruit and vegetables found a statistically significant positive effect for the intervention. In 5 of the 6 studies (including 2 relatively high-quality studies) assessing fat intake, a statistically significant decrease in fat was reported with the intervention. The only study assessing fibre intake reported no statistically significant effect with the intervention.

Health risk indicators.

There was no evidence about the effects of WHPPs with environmental modification on health risk indicators.

None of the 4 studies assessing cholesterol levels reported any statistically significant effect with the intervention. Two of the 3 studies assessing BMI reported no statistically significant effect with the intervention; the other study found a small statistically significant increase in BMI with the intervention. The only study assessing blood-pressure reported no statistically significant effect with the intervention.

Authors' conclusions
The small number of identified studies made it difficult to draw conclusions, but there was evidence that WHPPs that include environmental modifications can influence dietary intake. Further research is required.

CRD commentary
This review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. Limiting the search to published studies listed in two databases plus reference lists might have resulted in the omission of other relevant studies. It also raises the possibility of publication bias, which the authors acknowledged. Attempts were made to reduce language bias by including studies published in any of three languages. Methods were used to minimise reviewer errors and bias at the study selection and validity assessment stages, but it was unclear whether similar steps were taken in the data extraction. Validity was assessed using specified criteria and the results of the assessment were discussed.

The narrative synthesis of studies was appropriate in view of the differences between them. Some discussion of the influence of the criteria used to classify studies as high quality on the grading of the level of evidence would have been useful, as using different criteria might have altered the grading for some interventions. The authors did discuss the limitations of evidence obtained using self-reports, but the conclusions did not adequately reflect these limitations.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that more high-quality controlled trials are required to evaluate the impact of worksite environmental interventions on dietary intake and physical activity

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.