

A systematic review of the evidence for how healthy eating strategies in convenience stores affect diet-related outcomes across high-income countries.

Citation

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Review question

1. How are healthy eating strategies implemented in convenience stores associated with healthier diet-related outcomes in high-income countries?
2. What effects do healthy eating interventions implemented in convenience stores have on diet-related outcomes in high-income countries?
3. Do these effects/relationships vary according to socioeconomic position?

Searches

Sources to be searched are MEDLINE, Cochrane Central Register of Controlled Trials, PsycINFO, EconLit, Web of Science, Embase and Scopus. We will also screen the bibliographies of included articles for additional relevant studies. We will aim to include grey literature which we will identify through databases such as Overton, search engines such as Google, and bibliographies using systematic search methods where possible.

We will restrict our search to studies published from January 2005 to April 2024, as few articles had been published in this subject area until a significant article on food environments was published in 2005 (Glanz et al., 2005). Since then, the number of published articles in this area has increased, so this publication period should identify the most relevant literature.

If necessary, we will re-run searches before the final analysis so any recently published studies can be identified and included.

We will not include language restrictions in our search so that we can identify the number of relevant studies published in other languages. However, full text written in English will be an eligibility criterion for inclusion in the review.

Search strategy

https://cityuni-my.sharepoint.com/:w:/g/personal/olubunmi_kolawole_city_ac_uk/EcPmvqfS_DhBIIApAq9ELhgBPfVv1aWT5IFoKdGpgbFxKg?e=8vIqhg

Types of study to be included

We will include observational studies (cohort, case-control, cross-sectional) and intervention studies that used a controlled design (randomised controlled trials, natural experiments, before and after experiments).

Condition or domain being studied

The focus of this review is diet-related outcomes including dietary quality and purchasing behaviours, as indicators of the healthfulness of an individual's dietary intake and health measures of weight status such as BMI, as an indicator of health status.

Participants/population

Inclusion: Adults aged 18 years and older and adolescents aged 13 to 18 years old.

Exclusion: Studies with adolescents under the age of 13.

Intervention(s), exposure(s)

We will include studies that investigate the association or effect of any healthy eating strategy implemented within a convenience store to improve diet-related outcomes. Convenience stores will be defined as any small store that sells mostly food products. Speciality food stores (e.g. butchers) will be excluded and supermarkets or large grocery stores will be excluded.

Strategies considered to be exposure variables might include improving the availability or variety of healthier foods in stores or giving healthy foods more prominent positioning in-store or on the shelf (Glanz et al., 2005, Vogel and Piernas, Black et al., 2014). Healthy eating strategies could also include the promotion (through signage etc) of or reduced pricing of healthy foods or increased pricing or restricted promotions on unhealthy foods. We will also include observational studies where healthy eating strategies in convenience stores were examined as an exposure variable.

Comparator(s)/control

- 1) Product availability – change from no/limited availability and variety of healthy foods.
- 2) Product placement – unhealthy foods in prominent store (i.e. checkouts, store entrances, end of aisles) and shelf (i.e. eye-level) locations.
- 3) Price of products – unhealthy product prices standard, cheaper or discounted and no change to healthy food prices.
- 4) Product promotion – no/limited promotion of healthy foods and promotion of unhealthy foods e.g. through signage or marketing campaigns.

Context

Study setting is convenience stores (also referred to as small food stores, corner stores/shops, bodegas, tiendas).

Studies conducted in high-income countries will be included. All population groups (e.g. rural, urban) will be considered.

Main outcome(s)

The primary outcomes of interest are changes in diet-related outcomes including dietary quality, markers of dietary quality, purchasing patterns and weight status between baseline and follow-up. Markers of dietary quality include intake/consumption of fruits, vegetables and other healthy foods. Measures of weight status include BMI or waist circumference. Food purchasing outcomes of interest include increased purchasing of healthier foods/reduced purchasing of unhealthy food items via sales data (store or basket), household purchasing data or self-reported purchasing patterns.

Additional outcome(s)

None

Data extraction (selection and coding)

Study selection:

Two reviewers will apply the eligibility criteria to select studies for inclusion in the review. Both reviewers will independently screen full texts and will not discuss their decisions until after screening is completed. Reviewers will record their decisions for each study using the EPPI Reviewer 4 software. If there are any disagreements between their decisions, the reviewers will discuss their judgements and review the articles again to reach an agreement.

Data extraction:

The two reviewers will independently complete data extraction for selected articles. We will extract the relevant data and record it in a form designed specifically for this review. We have developed two data extraction forms, one for observation studies and a second for intervention studies. We will record the following information about each study:

Study details (study design, methodology, inclusion/exclusion criteria, control conditions), outcomes assessed and assessment methods, analysis (statistical techniques used, adjustment for confounders) and results. We will note any missing data on the form and discuss the potential implications of this on the data synthesis and subgroup analyses when writing up the review.

Following data extraction, the reviewers will indicate on the form whether the study should be included or excluded. If there are discrepancies between the reviewers' decisions, a third reviewer will be asked to review the article to reach a final decision.

Risk of bias (quality) assessment

Risk of bias will be assessed using a framework specifically developed for this review aligned with the criteria outlined by the Centre for Reviews and Dissemination (Centre for Reviews and Dissemination, 2008). The framework will include criteria assessing factors such as the reliability of outcome measures and adjustment for confounders. Internal validity will be assessed for study features such as the sample, outcome definition and measurement, follow-up and analysis. Separate risk of bias assessments have been developed for the intervention and observational studies.

Assessment will be conducted at the manuscript level. Two reviewers will judge each manuscript on each criterion as either low, medium or high risk of bias and provide a brief justification. Reviewers will then assess the overall risk of bias for the study and indicate whether there is a low, medium or high risk of bias. If there are disagreements, the reviewers will discuss them until an agreement is reached. If reviewers do not reach an agreement, a third reviewer will be asked to review the study and make a judgement.

Studies with a high risk of bias will be included in the data synthesis but we will declare any studies that have a high risk of bias.

Strategy for data synthesis [1 change]

We anticipate that there will be significant heterogeneity in the exposures/interventions and outcome variables being investigated in studies that meet the inclusion criteria. It will therefore not be possible or appropriate to conduct a meta-analysis of the data. As such, the authors aim to conduct a vote-counting method (McKenzie and Brennan, 2019) to provide a quantitative synthesis of the consistency of direction of effects across outcome measures. The vote-counting technique will be conducted according to Cochrane guidelines. Summary effect sizes will not be incorporated in the data synthesis. We will not require that there be a minimum number of studies for this synthesis. Studies will likely combine multiple strategies within the intervention/exposure so we will note where this occurs in the synthesis.

The data synthesis for this review will also involve a narrative synthesis of the data from the included studies. This narrative account will describe the different range of exposure/intervention strategies supportive of healthy eating. Depending on the design of included studies, it is likely that these interventions will be consistent with reviews of supermarket interventions published in this synthesis of systematic reviews and will therefore be grouped into signage, price, availability, positioning (store and shelf) and price promotions (Vogel, Piernas, 2022). When interpreting the

findings, we will narratively describe findings according to outcome variables (sales/purchasing, diet and BMI) and also describe findings by the region in which the study was set, i.e. North America, Australasia or Europe. We will also interpret the data according to socioeconomic status (SES), aligned with our third research question which considers how effects vary by SES (outlined in further detail in Q29).

Analysis of subgroups or subsets

The authors aim to carry out subgroup analyses for individual- and household-level factors including age and markers of socioeconomic status such as income to assess whether effects vary by socioeconomic status. Area-level factors such as markers of ethnic group-specific deprivation will also be explored where possible. Provided that studies report these data, we aim to present a descriptive analysis of how the outcome effects varied according to these individual- and area-level factors.

A subgroup analysis will be pertinent because both individual-, household- and area-level factors are known to influence diet-related outcomes, thus the outcome effects will likely vary according to these factors. The analysis could therefore help to identify the effects of these interventions for individuals belonging to different subgroups, which will be useful insights for policy and practice addressing dietary and health inequalities.

Contact details for further information

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Type and method of review

Systematic review

Anticipated or actual start date

01 March 2024

Anticipated completion date

30 September 2024

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Grant number(s)

State the funder, grant or award number and the date of award

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Conflicts of interest

OK has no conflicts of interest to declare. CV has a non-financial research collaboration with a UK supermarket chain and is leading a research study assessing sales and survey data within the convenience store sector in the UK.

None known

Language

English

Country

England

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

MeSH headings have not been applied to this record

Date of registration in PROSPERO

10 May 2024

Date of first submission

23 April 2024

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

10 May 2024