Economic evaluations of physical activity promotion for primary prevention: A systematic literature review of methods and results

Background

The promotion of physical activity (PA) has been acknowledged as a key public health (PH) strategy to tackle the increasing incidence of chronic non-communicable diseases and conditions (CNCD). Given the limited resources available to PH commissioners, there is a need to ensure that promoting PA is cost-effective. In response to this, economic evaluation methods have been employed by health economists to assess the value for money of PA promotion programmes.

Programmes promoting PA for primary prevention purposes have been found to be cost-effective in the majority of cases (Garrett et al., 2011, G. C et al., 2016, Laine et al., 2014, Wu et al., 2011, Pavey et al., 2011, Anokye et al., 2011). However, to date, little work has been carried out to appraise the methods used in these studies (Alayli-Goebbs et al., 2014, Weatherly et al., 2009). Acknowledging the influence that methodological choices and assumptions can have on the outcomes of an economic evaluation, and therefore on the decision-making, reviewing them may be important for a correct interpretation of study results.

This work may thus be informative about the current “state of play” of these economic evaluations. It will update on the progress made with regard to addressing acknowledged methodological challenges (Weatherly et al., 2009), as well as to identify relevant research gaps for the future.

Aims

To review economic evaluations of PA promotion programmes and to assess the methods employed and results.

Research questions

1. What methodological approaches for economic evaluation have been used?
2. What major modelling assumptions underlie these studies?
3. Do PA promotion programmes offer value for money?
4. If and how methodological challenges have been addressed?

Scope and definitions

Within this review, the words intervention, programme, initiative, technology and their plurals are used interchangeably. Full economic evaluations (EEs, defined as comparative economic studies assessing both costs and outcomes of alternative technologies) of programmes aimed at promoting solely PA in individuals from the general population or its sub-groups are included.
Primary prevention initiatives are defined as programmes aimed at reducing the risk of CNCD (e.g. cardiovascular disease, type 2 diabetes, impaired physical function) in subjects not already affected or diagnosed, as opposed to secondary prevention or health care interventions in patients.

In the relevant published literature there is no common definition / agreement as to how to classify individuals involved in these endeavours (for instance, sometimes they are referred to as “patients”, because of being recruited from primary care settings). However, within this work, individuals from the general population are referred to as follows, according to the different levels/types of health/disease risk factors:

- socio-demographic (age, gender, ethnicity, economic deprivation) – “apparently healthy”
- lifestyle-related (physical inactivity, weight status) - “at increased health risk”
- clinical (moderate and not chronic) conditions (e.g. hypertension, impaired glucose tolerance, moderate depression, anxiety and stress) - “at increased CNCD risk”.

Approach type: universal, if the intervention is made available to everybody in the population or group object of the intervention. Targeted, if the intervention, through a selective approach, is made available only to subjects having/carrying certain characteristics/increased risks (see above). These eligibility criteria are distinct from and do not include those set for health risk assessments (e.g. functional ability, pregnancy).

Intervention approach: standardised, if the intervention is not adapted to personal / subjective characteristics of the individuals. Tailored, vice versa.

Inclusion criteria
Studies will be eligible for review if they meet the following criteria:

- EEs
- On PA promotion
- For primary prevention purposes
- Written in the English language

Exclusion criteria
Economic studies that are:

- Not full EEs (e.g. cost-analysis)
- Not solely on PA promotion:
  - On programmes promoting PA in combination with other behaviours or technologies (e.g. dietary habits, smoking, drugs).
- Not on primary prevention:
- For health care purposes - (i.e. “curative” or “therapeutic”, e.g. management/treatment of disease, rehabilitation)
- For secondary prevention purposes (e.g. in diabetic or cardiac patients)
- For prevention of not permanently debilitating, clinical conditions or symptoms (e.g. acute conditions, musculoskeletal disorders, pain).

Search strategy
The following generic and specialised electronic databases will be searched for relevant studies in both the published and grey literature:

- through OVID:
  - MEDLINE
  - EMBASE
- Cochrane Library
- through EBSCO:
  - SportDiscuss
  - EconLit

A search strategy will consist of free-text and MeSH terms related to the four following concepts: (1) physical activity, (2) behaviour/lifestyle, (3) economic evaluation, (4) economic and decision model. Terms relating to intervention setting or type will not be included. This is justified as eligible papers may be missed in the search if intervention terms are included. Although this will undoubtedly produce a high yield of studies from the search, the sensitivity of the search (and therefore comprehensiveness of the systematic review) will be improved.

As the use of technical terms for indexing international literature in databases is often inconsistent, I will define a search strategy for MEDLINE that will be then adapted as necessary to take into account of the differing indexing terms across the other databases.

There will be no limits on the publication date. All records published in the English language will be included.

Study selection
Initial screening of titles and abstracts against inclusion criteria will be undertaken by one researcher (myself) and potentially relevant articles will be retrieved. A random 20 percent of the articles screened by title and abstract and all of the records assessed full text will be reviewed by a second researcher (DM). Any disagreements that arise between the two reviewers will be resolved through discussion.

Data extraction
Data from the retrieved articles will be extracted into three standardised data extraction forms. The first form will be used to answer question n.1 and collect relevant information from the included studies.

The second form will be used to answer question n. 2 and 4.

The third form will be used to answer question n. 3.
Critical assessment and quality appraisal

Given the aims of this work and the likely plurality of methods employed across economic studies, a narrative synthesis and analysis of the methods employed and study cost-effectiveness will be presented. Furthermore, studies will be appraised on the basis of their methodological shortcomings.

Data synthesis

No meta-analysis is planned. Data synthesis will be carried out using a framework which consists of the two following elements:

- critically appraising the economic evaluation methods employed
- conducting a narrative synthesis of findings of included studies

Risk of bias

Quantification of bias effects in the studies will not be conducted as I do not intend to synthesise the cost-effectiveness results. In term of review, bias will be reduced by having two independent assessors (myself and DM) and by retrieving articles from a number of databases. There will be restriction to the published literature.

Dissemination plans

As part of a PhD thesis, findings of the review will be presented at relevant national / international conferences and a paper will be submitted to a scientific journal for publication.

References


