

PROSPERO International prospective register of systematic reviews

Systematic review and meta-analysis of digital interventions for patient self management support for asthma

Gary McLean, Frances Mair, Kathryn Saunderson, Rebecca Band, Anne Bruton, Elizabeth Murray, Mike Thomas, Lucy Yardley, David Hiles, Peter Hanlon

Citation

Gary McLean, Frances Mair, Kathryn Saunderson, Rebecca Band, Anne Bruton, Elizabeth Murray, Mike Thomas, Lucy Yardley, David Hiles, Peter Hanlon. Systematic review and meta-analysis of digital interventions for patient self management support for asthma. PROSPERO 2014:CRD42014013455 Available from http://www.crd.york.ac.uk/PROSPERO_REBRANDING/display_record.asp?ID=CRD42014013455

Review question(s)

To summarize current knowledge of the effectiveness of digital self-management support for adults with asthma

Searches

MEDLINE, EMBASE, CINAHL Plus, PsycINFO, ERIC, Cochrane Library (including CDSR, Cochrane Central Register of Controlled Trials (CENTRAL), DARE, NHS EED, and HTA databases), DoPHER and TROPHI (both produced by the EPPI Centre), Social Science Citation Index and Science Citation Index Expanded

Types of study to be included

We will consider only randomised controlled trials which have been published in peer reviewed journals where the intervention is aimed at those with a diagnosis of Asthma as defined by the authors. These trials must:

- (1) have randomised patients to an intervention and have a control group that is defined as usual care;
- (2) have quantitative data on changes in outcomes;
- (3) be of adults only (16+) or if including those below 16 years have data on those 16+ that can be extracted separately;
- (4) defined as a digital intervention;
- (5) involve self- management by patients;
- (6) only studies published in English.

Condition or domain being studied

Asthma is common, affecting an estimated 300 million people world-wide and the number of disability-adjusted life years lost is estimated at 15million per year. The main goals of treatment for asthma include achieving and maintaining control of symptoms, normal activity levels, minimal exacerbations, normal lung function and preventing deaths from asthma. However, these goals are not widely achieved; people with asthma often tolerate unnecessary symptoms, and management of the condition can often be suboptimal. Guided self-management for asthma as part of systematic, planned care can lead to improvements in patient outcomes such as increases in knowledge, confidence to manage asthma and improved quality of life, as well as reductions in hospitalizations, emergency room visits, unscheduled visits to the doctor, and days off work.

Participants/ population

Adults (aged 16 or over) with a diagnosis of asthma as defined by authors of primary studies

Intervention(s), exposure(s)

We define “digital intervention” as any intervention delivered by digital technology. This includes, but is not limited

to, web-based interventions on PC or mobile devices, apps on smart phones, and interventions delivered by SMS or IVR (interactive voice recognition). Interventions should take information from users and provide tailored advice on self-management. Some form of facilitated or supported access may be included.

Comparator(s)/ control

Usual care.

We will also compare other groups in studies where there are additional controls in addition to usual care.

Outcome(s)

Primary outcomes

Primary outcomes may include:

- Measures of asthma control, Symptoms (e.g. diary card scores)
- Measures of asthma quality of life
- Exacerbations
- Restricted activities (e.g. days of work/school/disturbed nights)
- Lung function: e.g. spirometry & reversibility, peak expiratory flow
- Medication utilisation
- Compliance with medication
- Health service utilisation (including scheduled/unscheduled, and primary/secondary care)
- Biomarkers of airway inflammation (e.g. exhaled nitric oxide)
- Adverse events

Secondary outcomes

- Patient satisfaction
- Patient knowledge
- Adherence to monitoring tools
- Recruitment and retention rates
- Markers of self care (action plan use, inhaler technique for example)
- Data about economic benefits.

Data extraction, (selection and coding)

Studies that meet the inclusion criteria will then be screened in full by a minimum of two reviewers working independently to extract the relevant population, intervention and outcome data as relates to the primary and secondary outcomes above. This will be completed using data extraction forms on the Distiller software (<http://systematic-review.net/>) based on established data extraction forms. Again any inter-reviewer disagreements will be resolved by seeking consensus or decision by a third party

Risk of bias (quality) assessment

Risk of bias will be assessed in each of the included studies by the reviewers working independently. They will assess

data bias as per the Cochrane collaboration's tool for assessing bias. Areas of bias that will be assessed will include; allocation concealment, method of generation of allocation sequence, how knowledge of the allocated intervention was prevented during the study, whether incomplete outcome data was assessed, whether there was evidence of selective outcome reporting and whether there were any other problems that put the study at high risk of bias.

Strategy for data synthesis

Data will be synthesised using Distiller software. Tests for heterogeneity and publication bias will be conducted. Meta-regression will be performed to evaluate whether baseline factors may influence the significance and strength of the effect size.

Analysis of subgroups or subsets

This will depend on the results found. The meta-analysis could be stratified by type of intervention; time period of intervention; and/or study population.

Dissemination plans

It is intended to publish protocol and final results of review and analysis in peer review journals.

Contact details for further information

Dr McLean

University of Glasgow

General Practice & Primary Care

1 Horslethill Road

Glasgow G12 9LX

gary.mclean@glasgow.ac.uk

Organisational affiliation of the review

University of Glasgow/University of Southampton

Review team

Dr Gary McLean, University of Glasgow
Professor Frances Mair, University of Glasgow
Dr Kathryn Saunderson, University of Glasgow
Dr Rebecca Band, University of Southampton
Dr Anne Bruton, University of Southampton
Professor Elizabeth Murray, University College London
Professor Mike Thomas, University of Southampton
Professor Lucy Yardley, University of Southampton
Dr David Hiles, Asthma UK
Dr Peter Hanlon, University of Glasgow

Anticipated or actual start date

18 August 2014

Anticipated completion date

01 July 2015

Funding sources/sponsors

National Institute for Health Research

Conflicts of interest

None known

Language

English

Country

England, Scotland

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Asthma; Humans; Self Care

Stage of review

Ongoing

Date of registration in PROSPERO

27 August 2014

Date of publication of this revision

27 August 2014

DOI

10.15124/CRD42014013455

Stage of review at time of this submission

	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	No	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

PROSPERO

International prospective register of systematic reviews

The information in this record has been provided by the named contact for this review. CRD has accepted this information in good faith and registered the review in PROSPERO. CRD bears no responsibility or liability for the content of this registration record, any associated files or external websites.
