PROSPERO International prospective register of systematic reviews

Review title and timescale

1 Review title
Give the working title of the review. This must be in English. Ideally it should state succinctly the interventions or exposures being reviewed and the associated health or social problem being addressed in the review.
The effectiveness of online pain resources for Health Professionals: A systematic review with subset meta-analysis of educational intervention studies

2 Original language title
For reviews in languages other than English, this field should be used to enter the title in the language of the review. This will be displayed together with the English language title.

3 Anticipated or actual start date
Give the date when the systematic review commenced, or is expected to commence.
01/02/2016

4 Anticipated completion date
Give the date by which the review is expected to be completed.
23/06/2017

5 Stage of review at time of this submission
Indicate the stage of progress of the review by ticking the relevant boxes. Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. This field should be updated when any amendments are made to a published record.

The review has not yet started ×

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

Provide any other relevant information about the stage of the review here.

Review team details

6 Named contact
The named contact acts as the guarantor for the accuracy of the information presented in the register record.
Christina Liossi

7 Named contact email
Enter the electronic mail address of the named contact.
cliossi@soton.ac.uk

8 Named contact address
Enter the full postal address for the named contact.
Department of Psychology, Highfield, Southampton, SO17 1BJ

9 Named contact phone number
Enter the telephone number for the named contact, including international dialing code.
02380594645

10 Organisational affiliation of the review
Full title of the organisational affiliations for this review, and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.

None

Website address:

11 Review team members and their organisational affiliations

Give the title, first name and last name of all members of the team working directly on the review. Give the organisational affiliations of each member of the review team.

Title	First name	Last name	Affiliation
Professor	Christina	Liossi	University of Southampton & Great Ormond Street Hospital for Children NHS Foundation Trust
Mr	Alessandro	Failo	University of Trento, Italy
Dr	Daniel	Schoth	University of Southamptom
Dr	Glyn	Williams	Great ormond Street Hospital for Children NHS Foundation Trust
Dr	Richard	Howard	Great Ormond Street Hospital for Children NHS Foundation Trust

12 Funding sources/sponsors

Give details of the individuals, organizations, groups or other legal entities who take responsibility for initiating, managing, sponsoring and/or financing the review. Any unique identification numbers assigned to the review by the individuals or bodies listed should be included.

No specific funding is available for this review.

13 Conflicts of interest

List any conditions that could lead to actual or perceived undue influence on judgements concerning the main topic investigated in the review.

Are there any actual or potential conflicts of interest?

None known

14 Collaborators

Give the name, affiliation and role of any individuals or organisations who are working on the review but who are not listed as review team members.

Title	First name	Last name	Organisation details
Dr	Dilini	Rajapakse	Great Ormond Street Hospital for Children NHS Foundation Trust

Review methods

15 Review question(s)

State the question(s) to be addressed / review objectives. Please complete a separate box for each question.

To what extent is online-based pain instruction associated with improved outcomes in health professionals compared with no intervention?

To what extent is online-based pain instruction associated with improved outcomes in health professionals compared with non-online instructional methods?

What factors can explain potential differences in effect across participants, settings, interventions, outcomes, and study designs for each of these questions?

16 Searches

Give details of the sources to be searched, and any restrictions (e.g. language or publication period). The full search strategy is not required, but may be supplied as a link or attachment.

Studies will be identified via a search of Medline, PsychINFO, Web of Science, CINAHL, PubMed, Scopus, and Cochrane Library databases. Search terms will include three concept blocks: (i) type of intervention - online education, computer-based, e-learning, web-based, and internet-based; (ii) population – paediatrician, physician, nurse, psychologist, medical; (iii) outcome - pain*. All searches will be made between 1st January 1995 and 13th April

2016. The 1995 start date was selected as the internet had become privatized and commercialized (in the USA at least) by this point, with navigation much easier via the growing use of graphical browsers for the World Wide Web. Grey literature will be identified via Google Scholar, OpenGrey and hand searching of included studies.

17 URL to search strategy

If you have one, give the link to your search strategy here. Alternatively you can e-mail this to PROSPERO and we will store and link to it.

I give permission for this file to be made publicly available
Yes

18 Condition or domain being studied

Give a short description of the disease, condition or healthcare domain being studied. This could include health and wellbeing outcomes.
Educational intervention

19 Participants/population

Give summary criteria for the participants or populations being studied by the review. The preferred format includes details of both inclusion and exclusion criteria.
We will include: English language studies if they report evaluation of an online educational intervention to teach health professionals at any stage in training or practice compared with no intervention (i.e., a control group or pre intervention assessment) or a non-online intervention, about any aspect of pain using any of the following outcomes a) knowledge, b) skills, c) behaviours and patient effects, d) attitudes. Studies will be excluded if a) they report no outcomes of interest, b) use a single-group post-test only design, or evaluate a computer intervention that resides only on the client computer or CD-ROM or in which the use of the Internet was limited to administrative or secretarial purposes.

20 Intervention(s), exposure(s)

Give full and clear descriptions of the nature of the interventions or the exposures to be reviewed
Any online, digital course that is delivered to health professionals with the intention to improve knowledge, attitudes or services relating to pain and pain management of humans will be included. Part-time, short units and full courses will be included as well as multi-media classes that include online video, text, or audio files via computers or personal devices, and interventions which include an online component alongside other methods of delivering materials (e.g., live lectures).

21 Comparator(s)/control

Where relevant, give details of the alternatives against which the main subject/topic of the review will be compared (e.g. another intervention or a non-exposed control group).
No intervention control group; Other intervention control group; Participants as own controls.

22 Types of study to be included

Give details of the study designs to be included in the review. If there are no restrictions on the types of study design eligible for inclusion, this should be stated.
We will include single-group pretest-posttest, 2-group randomized and nonrandomized, parallel- group and crossover designs, and studies of “adjuvant” instruction, in which an Internet-based intervention is added to other instruction common to all learners.

23 Context

Give summary details of the setting and other relevant characteristics which help define the inclusion or exclusion criteria.
Online courses allow for completion in a range of locations (e.g., at home, Library, on work computer). There are therefore no inclusion or exclusion criteria regarding location of course access.

24 Primary outcome(s)

Give the most important outcomes.
(a) Knowledge: Subjective (e.g., learner self-report) or objective (e.g., multiple-choice question knowledge test) assessments of factual or conceptual understanding. (b) Skills: Subjective (e.g., learner self-report) or objective (e.g., faculty ratings, or objective tests of clinical skills such as Objective Structured Clinical Examinations (OSCE) with standardized patients) assessments of learners’ ability to demonstrate a procedure or technique. (c) Attitudes: Subjective report on attitudes and beliefs (e.g., importance of pain management, use of opioids for chronic pain). (d) Clinical Practice: Subjective (e.g., learner self-report) or objective (e.g., chart audit) assessments of behaviours in

practice (such as test ordering) (e) Health outcomes for patients (such as reduction in pain intensity).

Give information on timing and effect measures, as appropriate.
Any time.

25 Secondary outcomes

List any additional outcomes that will be addressed. If there are no secondary outcomes enter None.
Satisfaction (reaction) defined as learners' reported satisfaction with the course. Engagement with the online course including number of log-ins, time spent on intervention (e.g. minutes), number of pages viewed, number of sessions completed, number of web-sessions opened, number of features used, tasks achieved and intervention attrition rate (distinguished from trial attrition rate).

Give information on timing and effect measures, as appropriate.
Any time.

26 Data extraction (selection and coding)

Give the procedure for selecting studies for the review and extracting data, including the number of researchers involved and how discrepancies will be resolved. List the data to be extracted.
The search results and references will be transferred via text files and uploaded into the digital reference manager Endnote X7. All references will be scanned for duplication using an automated search engine within Endnote X7. Titles and/or abstracts of studies retrieved using the search strategy and those from additional sources will be screened independently by two review authors (DS & AF) to identify studies that potentially meet the inclusion criteria outlined above. The full text of these potentially eligible studies will be retrieved and independently assessed for eligibility by two review team members (DS & AF). Any disagreement between them over the eligibility of particular studies will be resolved through discussion with a third reviewer (CL). A standardised, pre-piloted form will be used to extract data from the included studies for assessment of study quality and evidence synthesis. Extracted information will include: study design (e.g., pretest-posttest vs posttest-only, number of groups, and method of group assignment); recruitment and study completion rates; study/learning setting; study population and participant demographics and baseline characteristics (e.g., number and training level of learners), details of the intervention (e.g., topic, instructional modalities used, length of course, level of cognitive interactivity, quantity of practice exercises, repetition, presence of online discussion and face-to-face discussion, synchronous/asynchronous learning); outcomes and times of measurement; and information for assessment of the risk of bias. Two review authors (DS & AF) will extract data independently, discrepancies will be identified and resolved through discussion (with a third author CL where necessary). If outcomes data are missing, we will request this information from authors by e-mail and send one reminder in case of no reply.

27 Risk of bias (quality) assessment

State whether and how risk of bias will be assessed, how the quality of individual studies will be assessed, and whether and how this will influence the planned synthesis.
As we anticipate a wide variety of study methodologies to be included (including, but not limited to pre/post designs and controlled trials), we do not anticipate using a single standardised instrument to undertake formal systematic appraisal for all included studies. Randomised and non-randomised controlled trials will be evaluated using the Cochrane Risk of Bias Tool. Each study included will be evaluated for risk of bias and will be coded as low-risk, high-risk or unclear risk, taking into account random sequence generation allocation sequence concealment, blinding, incomplete data and selective outcome reporting. Single-group pre-post studies will be evaluated using the Quality Assessment Tool for Before-After (Pre-Post) Studies With No Control Group developed by the National Institutes of Health (NIH). Minor amendments in wording for the purposes of our specific review have been made following piloting of this assessment tool (e.g., references to 'test/service/intervention' have been changed to 'intervention'), although all original items are retained. Two review authors (DS & AF) will complete the risk of bias tools for each study independently. Disagreements between the review authors over the risk of bias in particular will be resolved by discussion, with involvement of a third review author (CL) where necessary.

28 Strategy for data synthesis

Give the planned general approach to be used, for example whether the data to be used will be aggregate or at the level of individual participants, and whether a quantitative or narrative (descriptive) synthesis is planned. Where appropriate a brief outline of analytic approach should be given.
Reporting will be based on PRISMA guidelines for clinical trials and MOOSE guidelines for observational studies. Characteristics of included studies and educational interventions will be tabulated for descriptive synthesis of the data. Where eligible data permit we will analyse studies separately for outcomes of knowledge, skills, behaviours or patient effects, attitudes and satisfaction. Hedges' adjusted g effect sizes (standardized mean difference;

random–effects model) for between-group comparisons (i.e., intervention group versus no intervention control group/other intervention control group) will be computed using group means and standard deviations in Review Manager 5.3 (RevMan). Cohen's d effect sizes (random-effects model) will be computed for within-group analyses (i.e., pre- versus post-intervention) based on study means and standard deviations using Exploratory Software for Confidence Intervals (ESCI) software (Cumming, 2012). For all analyses Cochrane's Q and the I^2 statistic will be used to assess study heterogeneity, and sensitivity analyses will be used as appropriate. Meta-regression will also be used to explore the effect of explanatory variables on intervention effects. Where data are missing, we will first contact the study authors in an attempt to retrieve such data. In the event this is not possible, we will follow guidelines and recommendations in the Cochrane Handbook and where possible use reported statistics to compute missing data (e.g., obtaining standard deviations from standard errors and confidence intervals for group means; combining sub-groups using recommend formulae).

29 Analysis of subgroups or subsets

Give any planned exploration of subgroups or subsets within the review. 'None planned' is a valid response if no subgroup analyses are planned.

We will perform subgroup analyses to explore heterogeneity and to investigate differences in participants, interventions, design, and quality.

Review general information

30 Type and method of review

Select the type of review and the review method from the drop down list.

Systematic review

Education

31 Language

Select the language(s) in which the review is being written and will be made available, from the drop down list. Use the control key to select more than one language.

English

Will a summary/abstract be made available in English?

Yes

32 Country

Select the country in which the review is being carried out from the drop down list. For multi-national collaborations select all the countries involved. Use the control key to select more than one country.

England

33 Other registration details

Give the name of any organisation where the systematic review title or protocol is registered together with any unique identification number assigned. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here.

34 Reference and/or URL for published protocol

Give the citation for the published protocol, if there is one.

Give the link to the published protocol, if there is one. This may be to an external site or to a protocol deposited with CRD in pdf format.

I give permission for this file to be made publicly available

Yes

35 Dissemination plans

Give brief details of plans for communicating essential messages from the review to the appropriate audiences.

The systematic review will be presented at a Conference and a paper will be submitted by all authors to a leading journal in the fields of medicine or pain. Furthermore, should the findings of the review warrant a change in practice, a one page summary report will be prepared and sent to lead clinicians and healthcare professionals in the National Health Service and Deans of Medical Schools.

Do you intend to publish the review on completion?
Yes

36 Keywords
Give words or phrases that best describe the review. (One word per box, create a new box for each term)
Online pain course

Systematic Review

Meta-analysis

37 Details of any existing review of the same topic by the same authors
Give details of earlier versions of the systematic review if an update of an existing review is being registered, including full bibliographic reference if possible.
NA

38 Current review status
Review status should be updated when the review is completed and when it is published.
Ongoing

39 Any additional information
Provide any further information the review team consider relevant to the registration of the review.

40 Details of final report/publication(s)
This field should be left empty until details of the completed review are available.
Give the full citation for the final report or publication of the systematic review.
Give the URL where available.