Systematic review

1. * Review title.

Give the title of the review in English

Prevalence of Charles Bonnet Syndrome in Low Vision: A Systematic Review and Meta-analysis

2. Original language title.

For reviews in languages other than English, give the title in the original language. This will be displayed with the English language title.

3. * Anticipated or actual start date.

Give the date the systematic review started or is expected to start.

21/04/2021

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

18/06/2021

5. * Stage of review at time of this submission.

Tick the boxes to show which review tasks have been started and which have been completed. Update this field each time any amendments are made to a published record.

Reviews that have started data extraction (at the time of initial submission) are not eligible for inclusion in PROSPERO. If there is later evidence that incorrect status and/or completion date has been supplied, the published PROSPERO record will be marked as retracted.

This field uses answers to initial screening questions. It cannot be edited until after registration.

The review has not yet started: No

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.

6. * Named contact.

The named contact is the guarantor for the accuracy of the information in the register record. This may be any member of the review team.

Yousif Subhi

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:

Dr Subhi

7. * Named contact email.

Give the electronic email address of the named contact.

ysubhi@gmail.com

8. Named contact address

Give the full institutional/organisational postal address for the named contact.

Dept. of Ophthalmology, Rigshospitalet, Valdemar Hansens Vej 3, DK?2600 Glostrup, Denmark

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.

+45 28746055

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.

Dept. of Ophthalmology, Rigshospitalet, Valdemar Hansens Vej 3, DK?2600 Glostrup, Denmark

Organisation web address:

11. * Review team members and their organisational affiliations.

Give the personal details and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong. **NOTE: email and country now MUST be entered for each person, unless you are amending a published record.**

Dr Yousif Subhi. Department of Ophthalmology, Zealand Univ. Hospital, Roskilde, Denmark
Mr Mads Assenholt Nielsen. Department of Ophthalmology, Rigshospitalet, Glostrup, Denmark
Dr Daniel Andrew Richard Scott. Department of Ophthalmology, Waikato District Health Board, Hamilton, New Zealand
Assistant/Associate Professor Lars Morten Holm. Department of Ophthalmology, Rigshospitalet, Glostrup, Denmark
Assistant/Associate Professor Amardeep Singh. Department of Ophthalmology, Rigshospitalet, Glostrup, Denmark

12. * Funding sources/sponsors.

Details of the individuals, organizations, groups, companies or other legal entities who have funded or sponsored the review.

No funding is obtained for this study.

Grant number(s)

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

13. * Conflicts of interest.

List actual or perceived conflicts of interest (financial or academic).

None

14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members. **NOTE: email and country must be completed for each person, unless you are amending a published record.**

15. * Review question.

State the review question(s) clearly and precisely. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS or similar where relevant.

To review and summarize the literature on the prevalence of Charles Bonnet syndrome (CBS) in low vision populations.

16. * Searches.

State the sources that will be searched (e.g. Medline). Give the search dates, and any restrictions (e.g. language or publication date). Do NOT enter the full search strategy (it may be provided as a link or attachment below.)

We will search the literature databases PubMed/MEDLINE, EMBASE, Web of Science Core Collection, BIOSIS Previews, Current Contents Connect, Data Citation Index, Derwent Innovations Index, KCI-Korean Journal Database, Russian Science Citation Index, SciELO Citation Index, and the Cochrane Central. The search will be performed on April 21st, 2021. We will use search phrases specifically tailored to the individual literature databases developed by a trained individual (Author Y.S.) using MeSH-terms (or equivalents) where possible.

17. URL to search strategy.

Upload a file with your search strategy, or an example of a search strategy for a specific database, (including the keywords) in pdf or word format. In doing so you are consenting to the file being made publicly accessible. Or provide a URL or link to the strategy. Do NOT provide links to your search **results**.

https://www.crd.york.ac.uk/PROSPEROFILES/255021_STRATEGY_20210514.pdf

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Do not make this file publicly available until the review is complete

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied in your systematic review.

Charles Bonnet syndrome, which is a condition seen in patients with visual impairment.

19. * Participants/population.

Specify the participants or populations being studied in the review. The preferred format includes details of both inclusion and exclusion criteria.

Studies with a cross-sectional design providing prevalence estimates of Charles Bonnet syndrome in a population defined as being low vision or having moderate-to-severe visual impairment. Definition of low vision or moderate-to-severe visual impairment will not be restricted, instead we will extract details of these and present them in the review. We will not consider studies looking at specific diseases, as we want to determine prevalence of Charles Bonnet syndrome in unselected groups of low vision patients.

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the interventions or the exposures to be reviewed. The preferred format includes details of both inclusion and exclusion criteria.

Prevalence of Charles Bonnet syndrome

21. * Comparator(s)/control.

Where relevant, give details of the alternatives against which the intervention/exposure will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

Not relevant

22. * Types of study to be included.

Give details of the study designs (e.g. RCT) that are eligible for inclusion in the review. The preferred format includes both inclusion and exclusion criteria. If there are no restrictions on the types of study, this should be stated.

Studies with a cross-sectional design providing prevalence estimates of Charles Bonnet syndrome.

23. Context.

Give summary details of the setting or other relevant characteristics, which help define the inclusion or exclusion criteria.

24. * Main outcome(s).

Give the pre-specified main (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

The primary outcome measure is the prevalence of CBS in a population defined as being low vision or moderate-to-severe visual impairment.

Measures of effect

Please specify the effect measure(s) for you main outcome(s) e.g. relative risks, odds ratios, risk difference,

and/or 'number needed to treat.

25. * Additional outcome(s).

List the pre-specified additional outcomes of the review, with a similar level of detail to that required for main outcomes. Where there are no additional outcomes please state ‘None’ or ‘Not applicable’ as appropriate to the review

None

Measures of effect

Please specify the effect measure(s) for you additional outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

26. * Data extraction (selection and coding).

Describe how studies will be selected for inclusion. State what data will be extracted or obtained. State how this will be done and recorded.

One author (Y.S) will examine the title and abstracts from the literature search and remove duplicates and obviously irrelevant reports. Two authors (Y.S. and M.A.N.) will then examine full text of remaining references for eligibility and review references from these studies for any additional relevant studies. In case of disagreement, a third author (A.S.) will be invited to discuss and to reach a final consensus.

Data regarding study design and characteristics, participant characteristics, diagnostic method, and prevalence results will be extracted from eligible studies using extraction forms. Two authors (Y.S. and M.A.N.) will work independently and meet afterwards to compare results and discuss any discrepancies. Where consensus cannot be reached, a third author (A.S.) will be invited to discuss and to reach a final consensus.

27. * Risk of bias (quality) assessment.

State which characteristics of the studies will be assessed and/or any formal risk of bias/quality assessment tools that will be used.

Quality of eligible studies will be assessed using relevant items of the Agency for Healthcare Research and Quality checklist for Cross-Sectional/Prevalence Studies. Two authors (Y.S. and D.A.R.S.) will work independently and meet afterwards to compare results and discuss any discrepancies. Where consensus cannot be reached, a third author (A.S.) will be invited to discuss and to reach a final consensus.

28. * Strategy for data synthesis.

Describe the methods you plan to use to synthesise data. This **must not be generic text** but should be **specific to your review** and describe how the proposed approach will be applied to your data. If meta-analysis is planned, describe the models to be used, methods to explore statistical heterogeneity, and software package to be used.

All studies will be qualitatively reviewed and described in text and in tables. Meta-analysis, in case it is possible, will be performed using MetaXL 5.3 (EpiGear International, Sunrise Beach, QLD, Australia) for Microsoft Excel 2013 (Microsoft, Redmont, WA, USA). We will use a random-effects model to account for possible heterogeneity between the studies. In prevalence meta-analyses, caution must be shown when

numbers are close to the extremes (0% or 100%) because of variance instability, which results in studies getting erroneous weights. Hence, prevalence numbers will be transformed using the double arcsine method for analysis and then back transformed for interpretation. Heterogeneity will be assessed using Cochran's Q and quantified using I^2. A Funnel plot will be used to identify skewed results, e.g. due to publication bias. Final results of outcome measures will be pooled estimates presented using a Forest plot. Sensitivity analyses will be made by removing studies in turn and evaluating the magnitude of the change of the results. These analyses will allow us to comment on the homogeneity of prevalence estimates and the overall strength of our final estimates.

29. * Analysis of subgroups or subsets.

State any planned investigation of 'subgroups'. Be clear and specific about which type of study or participant will be included in each group or covariate investigated. State the planned analytic approach.

None.

30. * Type and method of review.

Select the type of review, review method and health area from the lists below.

Type of review

Cost effectiveness
No

Diagnostic
No

Epidemiologic
Yes

Individual patient data (IPD) meta-analysis
No

Intervention
No

Living systematic review
No

Meta-analysis
No

Methodology
No

Narrative synthesis
No

Network meta-analysis
No

Pre-clinical
No

Prevention
No

Prognostic
No

Prospective meta-analysis (PMA)
No

Review of reviews
No

Service delivery
No

Synthesis of qualitative studies
No

Systematic review
Yes

Other
No

Health area of the review

Alcohol/substance misuse/abuse
No

Blood and immune system
No

Cancer
No

Cardiovascular
No

Care of the elderly
No

Child health
No

Complementary therapies
No

COVID-19
No

Crime and justice
No

Dental
No

Digestive system
No

Ear, nose and throat
No

Education
No

Endocrine and metabolic disorders

No

Eye disorders
Yes

General interest
No

Genetics
No

Health inequalities/health equity
No

Infections and infestations
No

International development
No

Mental health and behavioural conditions
No

Musculoskeletal
No

Neurological
No

Nursing
No

Obstetrics and gynaecology
No

Oral health
No

Palliative care
No

Perioperative care
No

Physiotherapy
No

Pregnancy and childbirth
No

Public health (including social determinants of health)
No

Rehabilitation
No

Respiratory disorders
No

Service delivery
No

Skin disorders
No

Social care
No

Surgery
No

Tropical Medicine
No

Urological
No

Wounds, injuries and accidents
No

Violence and abuse
No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.
English

There is not an English language summary

32. * Country.

Select the country in which the review is being carried out. For multi-national collaborations select all the countries involved.

Denmark

33. Other registration details.

Name any other organisation where the systematic review title or protocol is registered (e.g. Campbell, or The Joanna Briggs Institute) together with any unique identification number assigned by them. 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. If none, leave blank.

34. Reference and/or URL for published protocol.

If the protocol for this review is published provide details (authors, title and journal details, preferably in Vancouver format)

Add web link to the published protocol.

https://www.crd.york.ac.uk/PROSPEROFILES/255021_PROTOCOL_20210514.pdf

Or, upload your published protocol here in pdf format. Note that the upload will be publicly accessible.

No I do not make this file publicly available until the review is complete

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

35. Dissemination plans.

Do you intend to publish the review on completion?

Yes

Give brief details of plans for communicating review findings.?

We intend to publish the results in a peer-reviewed academic journal.

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords help PROSPERO users find your review (keywords do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

Charles Bonnet syndrome; low vision

37. Details of any existing review of the same topic by the same authors.

If you are registering an update of an existing review give details of the earlier versions and include a full bibliographic reference, if available.

38. * Current review status.

Update review status when the review is completed and when it is published.New registrations must be ongoing so this field is not editable for initial submission.
Please provide anticipated publication date

Review_Ongoing

39. Any additional information.

Provide any other information relevant to the registration of this review.

40. Details of final report/publication(s) or preprints if available.

Leave empty until publication details are available OR you have a link to a preprint (NOTE: this field is not editable for initial submission). List authors, title and journal details preferably in Vancouver format.

Give the link to the published review or preprint.