Systematic review

Fields that have an asterisk (*) next to them means that they must be answered. Word limits are provided for each section. You will be unable to submit the form if the word limits are exceeded for any section.

Registrant means the person filling out the form.

This record cannot be edited because it has been marked as out of scope

   Give the title of the review in English
   Relevance between chronic cerebrospinal venous insufficiency and multiple sclerosis: 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.
   12/10/2022

4. * Anticipated completion date.
   Give the date by which the review is expected to be completed.
   25/01/2023

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

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

   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.
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The review has not yet started: No

<table>
<thead>
<tr>
<th>Review stage</th>
<th>Started</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary searches</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Piloting of the study selection process</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Formal screening of search results against eligibility criteria</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Data extraction</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Risk of bias (quality) assessment</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Data analysis</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

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.

Jun Yang

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

Mr Yang

7. * Named contact email.
Give the electronic email address of the named contact.

1191815774@qq.com

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

the First Affiliated Hospital of Nanchang University, Jiangxi Province, China

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

18779534691
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.

The First Affiliated Hospital of Nanchang University

Organisation web address:

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.

Mr Jun Yang. The First Affiliated Hospital of Nanchang University

12. * Funding sources/sponsors.
Details of the individuals, organizations, groups, companies or other legal entities who have funded or sponsored the review.

the National Natural Science Foundation of China

Grant number(s)

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

81960247

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

None

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.

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.

Is the prevalence of chronic cerebrospinal venous insufficiency higher in patients with MS compared to healthy individuals? Is there an association between chronic cerebrospinal venous insufficiency and MS?

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.)

The following bibliographic databases were searched the MEDLINE versus Embase databases using the OVID portal, with search dates adjusted from January 1, 2006, to April 1, 2022.

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.


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.

Multiple Sclerosis (MS) is a chronic neurological disease that primarily affects the central nervous system (which includes the brain and spinal cord). The cause is unknown, and it is characterized by demyelination in pathology. Common symptoms include muscle paralysis, motor impairment, sensory impairment, vision problems, fatigue, etc. Currently, there is no cure and common treatment methods include...
Treatment methods vary depending on the cause, including physical therapy, medication, rehabilitation, nutritional therapy, etc.

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

The trial included patients of any age with multiple sclerosis.

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.

use of Doppler ultrasound to detect chronic cerebrospinal venous insufficiency?

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.

use of Doppler ultrasound to detect chronic cerebrospinal venous insufficiency?

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.

We have no restrictions on the types of study designs eligible for inclusion.

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.

There is a correlation between xx and multiple sclerosis.

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
chronic cerebrospinal venous insufficiency is more prevalent in patients with multiple sclerosis than in healthy individuals.

Measures of effect

Please specify the effect measure(s) for any 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.

Two authors extracted data and entered it into a standardized collection form, independently reviewed and confirmed by a third author. The extracted data were as follows: first author, country, publication date, sample size, demographic characteristics of participants (age vs. percentage female), and study characteristics of patients (dis-ease duration, percentage treated, and expanded disability status scale). For some of the missing data, the researchers were also active in obtaining it from the article’s authors via email.

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

Two reviewers will independently assess risk of bias based on the following domains from recommendations from the Cochrane handbook: 1. Adequate sequence generation; 2. Allocation concealment; 3. Blinding; 4. Incomplete outcome data and how it was addressed; 5. Selective reporting of the outcome; 6. Any other biases. Results of bias assessment will be presented in a figure and a graph indicating low, high or unclear risk of bias for each of the 6 items in each trial. Sensitivity analysis will be conducted based on the bias assessment to assess robustness of results.

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.

STATA 17.0 (STATA Corp., College Station, TX, USA) was used to conduct the meta-analysis by the researchers. One investigator entered the detailed data into the software. Another investigator reviewed the data for accuracy, generating forest plots and odds ratios (ORs) to determine whether there was a statistical relevance between CCSVI and MS. The pooled ORs for this study were derived using a random-effects model. An OR greater than 1.0 indicates that at least two ultrasound diagnostic criteria were met and displayed a positive correlation between CCSVI and MS, with p 0.05, indicating a statistically significant
difference. The origins of heterogeneity in the included studies were examined using Cochran’s Q and I² statistics. I² values of at least 50% are usually considered to represent substantial heterogeneity, while values of at least 75% indicate considerable heterogeneity. By the Cochrane Review Manager 5.4 version 5.4.1. for publication bias was assessed using the Egger test, p 0.05 indicates significant publication bias. Meanwhile, the Fill and Trim methods were used to correct for publication bias. To determine the effect of individual studies in the article on the experimental results, the researchers used a sensitivity analysis by excluding individual studies. In addition, we used subgroup analysis to further look for sources of heterogeneity.

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. Sensitivity analyses to assess the robustness of the results and subgroup analyses to determine whether the summary effects are related to the clinical characteristics of the included trials are pre-specified. In addition, sensitivity analyses will be performed to include only those trials that do not have any assessment bias. Two subgroup analyses will also be performed. The first one assesses whether studies by authors associated with the Zamboni team have an impact on the results; the second one examines whether liberation therapy has an impact on the relevance of the results.

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
No
Individual patient data (IPD) meta-analysis
No
Intervention
No
Living systematic review
No
Meta-analysis
Yes
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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
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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  No
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
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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

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

China

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.

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?

No

Give brief details of plans for communicating review findings?

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
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.