Systematic review

1. * Review title.

Give the working title of the review, for example the one used for obtaining funding. Ideally the title should state succinctly the interventions or exposures being reviewed and the associated health or social problems. Where appropriate, the title should use the PI(E)COS structure to contain information on the Participants, Intervention (or Exposure) and Comparison groups, the Outcomes to be measured and Study designs to be included.

Diet and disease-related outcomes in multiple sclerosis: A systematic review

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.

31/08/2019

4. * Anticipated completion date.

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

31/08/2020

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

Indicate the stage of progress of the review by ticking the relevant Started and Completed boxes. Additional information may be added in the free text box provided.
Please note: Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. Should evidence of incorrect status and/or completion date being supplied at the time of submission come to light, the content of the PROSPERO record will be removed leaving only the title and named contact details and a statement that inaccuracies in the stage of the review date had been identified.
This field should be updated when any amendments are made to a published record and on completion and publication of the review. If this field was pre-populated from the initial screening questions then you are not able to edit it until the record is published.

The review has not yet started: No

Review stage	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

Provide any other relevant information about the stage of the review here (e.g. Funded proposal, protocol not yet finalised).

Preliminary searches were started from 24/06/2019

Preliminary searches were started from 24/06/2019

6. * Named contact.

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

Dr Sama Bitarafan

or

Dr Helen Tremlett

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

Dr Helen Tremlett

7. * Named contact email.

Give the electronic mail address of the named contact.

Bitarafans@gmail.com

Helen.Tremlett@ubc.ca

8. Named contact address

Give the full postal address for the named contact.

Iranian Center of Neurological Research, Neuroscience Institute, Imam Khomeini Hospital, Tehran University of Medical Sciences, Keshavarz Blvd, Tehran, Iran/ Postal code: 1419733141/ Phone: 982166948899 and fax: +982166581558/ http://ni.tums.ac.ir/nd/fa/

and

Djavad Mowafaghian Centre for Brain Health, Faculty of Medicine (Neurology) rm S126, UBC Hospital, 2211 Wesbrook Mall, University of British Columbia, Vancouver, BC. V6T 2B5. Canada Tel: 604 8220759. Web-site: http://epims.med.ubc.ca/

9. Named contact phone number.

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

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.

Djavad Mowafaghian Centre for Brain Health, University of British Columbia, Vancouver, Canada.

http://epims.med.ubc.ca/

and

Iranian Center of Neurological Research, Neuroscience institute, Tehran university of medical sciences.

http://ni.tums.ac.ir/nd/fa/

Organisation web address:

https://www.centreforbrainhealth.ca/

and

http://ni.tums.ac.ir/nd/fa/

11. * Review team members and their organisational affiliations.

Give the title, first name, last name and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong.

Professor Helen Tremlett. Djavad Mowafaghian Center for Brain Health, University of British Columbia, Vancouver, Canada. http://epims.med.ubc.ac/
Dr Sama bitarafan. Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Scienses, Tehran, Iran. http://ni.tums.ac.ir/nd/fa
Professor Mohammad Hossein Harirchian. Iranian Center of Neurological Research, Tehran University of Medical Sciences, Tehran, Iran

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. Include any unique identification numbers assigned to the review by the individuals or bodies listed.

This work is not supported by a specific funding source.

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.

Yes

Helen Tremlett is the Canada Research Chair for Neuroepidemiology and Multiple Sclerosis. Current research support received from the National Multiple Sclerosis Society, the Canadian Institutes of Health Research, the Multiple Sclerosis Society of Canada and the Multiple Sclerosis Scientific Research Foundation. In addition, in the last five years, has received research support from the Multiple Sclerosis Society of Canada (Don Paty Career Development Award); the Michael Smith Foundation for Health Research (Scholar Award) and the UK MS Trust; speaker honoraria and/or travel expenses to attend CME

conferences from the Consortium of MS Centres (2013, 2018), the National MS Society (2014, 2016, 2018), ECTRIMS (2013, 2014, 2015, 2016, 2017, 2018, 2019), Biogen Idec (2014), American Academy of Neurology (2013, 2014, 2015, 2016, 2019). All speaker honoraria are either declined or donated to an MS charity or to an unrestricted grant for use by HT's research group.

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.

15. * Review question.

State the question(s) to be addressed by the review, clearly and precisely. Review questions may be specific or broad. 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 where relevant.

Are there any specific kinds of diet or food that affect MS disability, relapses, or MS-related comorbidity or symptomology (e.g., fatigue, mood disorders)?

The objective of the systematic review is to determine and compare the effect of specific kinds of diet or food and disease related outcomes, including disability, relapse rates, and MS-related comorbidity or symptomology (e.g., fatigue, mood disorders)

16. * Searches.

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

Search strategies will be developed using MeSH terms and keywords related to multiple sclerosis and diet. We will search MEDLINE (PubMed interface), EMBASE (OVID interface), Web of Science. The search strategies will be provided by the project team, then peer-reviewed by a Health Sciences Librarian with expertise in systematic review searching. The MEDLINE search strategy draft is listed below. After the MEDLINE strategy is finalized, it will be adapted to other databases. search date is from inception to 20 August 2019. Only available articles reported in the English language will be included. Literature search results will be uploaded to EndNote.

17. URL to search strategy.

Give a link to a published pdf/word document detailing either the search strategy or an example of a search strategy for a specific database if available (including the keywords that will be used in the search strategies), or upload your search 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.

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

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.

Multiple Sclerosis

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.

The study population will include people with multiple sclerosis (All MS disease courses, including relapsing remitting, secondary progressive, primary progressive)

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

Give full and clear descriptions or definitions of the nature of the interventions or the exposures to be reviewed.

Dietary or food interventions, with a focus on macronutrients and dietary patterns:- Carbohydrates such as Grains, beans, legumes, cereals, etc.- Proteins such as fish, red meat, egg, etc.- Lipids or fats such as olive oil, nuts and seeds, fish oils, plant oils etc.- Fibers such as fruits and vegetables, etc. - Dairy products such as milk, butter, ghee, yogurt, cheese, cream and ice cream, etc.- Some beverages e.g. alcohol, coffee, tea, etc. - Dietary patterns (composition of food groups in diet) e.g. Modified Paleolithic, Ketogenic, Mediterranean, Vegan, gluten free, Western diets etc.

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). The preferred format includes details of both inclusion and exclusion criteria.

No specific dietary intervention or a comparative dietary interventions e.g. western vs Mediterranean or other active or inactive comparator intervention or a placebo

22. * Types of study to be included.

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

Inclusion criteria: Published and English-language, Randomized and Non-randomized Clinical Trials

Exclusion criteria: Animal studies, Letters or abstract from conferences or meetings, Review articles, Observational studies, case reports. Studies focused on; micro-nutrient or chemical supplementation (e.g., vitamin D, iron, and probiotic). To avoid duplicated efforts, any other systematic reviews related to our topic will be retained and described.

23. Context.

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

There will be no restrictions in terms of geographical residence or source of population of participants (e.g. community or hospital).

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.

Disability,

relapses (e.g. rates, counts, proportion of patients relapse free)

and MS-related comorbidity or symptomology (e.g., fatigue, mood disorders, cognition)

Timing and effect measures

Not applicable

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

Not applicable

Timing and effect measures

Not applicable

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 reviewer will retrieve, screen and extract data from each included study at levels of title, abstract and full-text. Another will confirm all process in order to reduce bias and errors in data extraction.

These following information will be extracted into a standardized form:

1- Publication information (name of first author(s), year of publication, and study geographic location)2. Study design3. Sample size of study (number of patients in each group at first and at end of study) 4. Subject characteristics (age, sex, weight, body mass index (BMI), Disease duration, course of MS at first)

5. Main findings or outcomes included: disability measurement scores, relapses (e.g. rates, counts, proportion of patients relapse free), and comorbidity scores such as fatigue measurement scores, depression measurement scores, cognition measurement scores, etc.)

27. * Risk of bias (quality) assessment.

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

To assess the risk of bias or quality for each included study we will use 'Oxford quality scoring system (the

Jadad scale)'. Two reviewers will make this judgment independently. Disagreements between reviewers will be resolved by consulting a third expert for arbitration. Publication bias will be explored graphically using funnel plots and statistically using the Egger's test if 10 or more studies are available.

28. * Strategy for data synthesis.

Provide details of the planned synthesis including a rationale for the methods selected. This **must not be generic text** but should be **specific to your review** and describe how the proposed analysis will be applied to your data.

Where possible, we will pool outcome data from each included study and estimate the effect size of interventions using a random-effect model with findings reported with the related 95% confidence intervals. The Q-test will be used to assess the heterogeneity of data. If the results are heterogeneous Isq, subgroup analysis will be used to determine the source of the heterogeneity of the data and to evaluate the efficacy of each subgroup. eligible studies without available data upon request with 2 reminder emails will not be included in the meta-analysis. If a meta-analyses is not feasible, findings will be reported in the style of a narrative synthesis.

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.

Subgroup analyses may be used if it is feasible. Factors of interest include clinical characteristics (e.g., course of disease, disease duration) and participant characteristics (age, sex, and BMI).

30. * Type and method of review.

Select the type of review and the review method from the lists below. Select the health area(s) of interest for your review.

Type of review

Cost effectiveness
No

Diagnostic
No

Epidemiologic
No

Individual patient data (IPD) meta-analysis
No

Intervention
Yes

Meta-analysis
Yes

Methodology
No

Narrative synthesis
Yes

Network meta-analysis
No

Pre-clinical
No

Prevention
Yes

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
Yes

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
Yes

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 from the drop down list. For multi-national collaborations select all the countries involved.

Canada

33. Other registration details.

Give the name of any organisation where the systematic review title or protocol is registered (such as with The Campbell Collaboration, or The Joanna Briggs Institute) together with any unique identification number assigned. (N.B. Registration details for Cochrane protocols will be automatically entered). 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.

Give the citation and link for the published protocol, if there is one

Give the link to the published protocol.

Alternatively, upload your published protocol to CRD in pdf format. Please note that by doing so you are consenting to the file being made 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.

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

Do you intend to publish the review on completion?

No

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords will help users find the review in the Register (the words 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.

Multiple Sclerosis, diet, food, systematic review, clinical trials, disability, relapses, comorbidity, fatigue,

depression

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.

38. * Current review status.

Review status should be updated when the review is completed and when it is published. For newregistrations the review must be Ongoing.
Please provide anticipated publication date

Review_Ongoing

39. Any additional information.

Provide any other information the review team feel is 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 link to the published review.