

Epidemiology of multiple sclerosis in Iran: a systematic review and ?meta-analysis  
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### Review question

What is the overall prevalence of MS and its sensitivity analysis?

What is the prevalence of MS based on region, ?province, study design, and year of study?

What is the prevalence of MS based on gender?

What is the overall incidence of MS and its sensitivity analysis?

What is the incidence of MS based on region, province, ?study design, and year of study?

What is the Incidence of MS based on gender?

?What is the the meta-regression diagram for prevalence and incidence of MS based on the year??

?How is the the publication bias in the studies of incidence and prevalence?

what is the result of GRADE assessment of confidence in estimates of effect ?(Grading of evidence)?

### Searches

The present systematic review focused on MS epidemiology in Iran based on PRISMA guideline ??for systematic review and meta-analysis. All the steps of research, including search, ?selection of studies, qualitative assessment, and data extraction will be carried out independently by two ?researchers. ?

The search was performed by two researchers independently. We searched the titles and abstracts ?of articles in six Persian databases including Scientific Information Database (SID) ??(<http://www.sid.ir/>), Barakat Knowledge Network System (<http://health.barakatkns.com>), ??(Iranian Research Institute for Information Science and Technology (IranDoc) ??(<https://irandoc.ac.ir>), Regional Information Center for Science and Technology (RICST) ??(<http://en.ricest.ac.ir/>), Magiran (<http://www.magiran.com/>), Iranian National Library ??(<http://www.nlai.ir/>) and seven international databases including Scopus, PubMed/MEDLINE, ?ScienceDirect, Cochrane Library, Web of Science, Embase, PsycINFO as well as Google ?Scholar search engine for peer-reviewed studies published without time limit until May 2018.

The ?keywords used were 'incidence', 'prevalence', 'epidemiology', 'MS', 'multiple sclerosis' and 'Iran'. ?Boolean operators (AND & OR) were used to search by a combination of words.

### Types of study to be included

Cross-sectional and epidemiological studies

### Condition or domain being studied

Epidemiology of multiple sclerosis in Iran containing prevalence and incidence.

### Participants/population

## PROSPERO

### International prospective register of systematic reviews

All epidemiological studies on MS? in Iran.

#### Intervention(s), exposure(s)

Intervention: Poser or McDonald criteria for confirmed MS

#### Comparator(s)/control

That can show the prevalence and incidence of MS based on geographical region and province ?and other mentioned subgroups.

#### Context

#### Main outcome(s)

Overall prevalence and incidence of MS in Iran

#### Additional outcome(s)

Overall prevalence of MS and its sensitivity analysis.

Prevalence of MS based on region, ?province, study design, and year of study.

Prevalence of MS based on gender.

Overall incidence of MS and its sensitivity analysis.

Incidence of MS based on region, province, ?study design, and year of study.

Incidence of MS based on gender.

The meta-regression diagram for prevalence and incidence of MS based on the year.

Publication bias in the studies of incidence and prevalence.

Result of GRADE assessment of confidence in estimates of effect ?(Grading of evidence).

#### Data extraction (selection and coding)

The following information will be extracted:

First author, year of publication, year of study, study setting, location, sample size, geographical ?area, province, the prevalence and incidence of MS and MS diagnostic method.

#### Risk of bias (quality) assessment

Researchers will be examining the quality of the selected articles using a scoring system based on the 8-?item the modified Newcastle Ottawa Scale (NOS) for non-randomized studies. ?Each question will be given a score between 0 and 1. Points 0-5, 6-7 and 8-9 will be considered low ?quality, moderate quality and high quality, respectively. The minimum score for entering the ?quantitative meta-analysis process will be 5 and the articles that will be acquired the minimum qualitative ?assessment score entered the process of data extraction and meta-analysis. ?

#### Strategy for data synthesis

The present systematic review focused on MS epidemiology in Iran based on PRISMA guideline ??for systematic review and meta-analysis. All the steps of research, including search, ?selection of studies, qualitative assessment, and data extraction will be carried out independently by two ?researchers, in the event of any differences in opinion, a specialist will carefully investigate the issue.

We will provide a narrative synthesis of the results from the included studies.

We searched the titles and abstracts ?of articles in six Persian databases and seven international databases for peer-reviewed studies published without time limit until May 2018. 'incidence', 'prevalence', 'epidemiology', 'MS', 'multiple sclerosis' and 'Iran'. ?Boolean operators (AND & OR) used to search by a

combination of words.

To evaluate the heterogeneity of the studies, Cochran's Q and I<sup>2</sup> tests will be used. Heterogeneity will be defined as I<sup>2</sup>>50% and the Cochran's Q test was defined as <0.05. Therefore, the random effects model will be used to estimate the prevalence of MS with high heterogeneity. In this study, a sensitivity analysis will be also performed to verify the stability of the data. In order to find the source of heterogeneity, a subgroup analysis will be conducted in terms of geographic area, year of study, province, and study setting while a meta-regression model will be used for the prevalence of MS in terms of year of studies. Begg and Egger's tests will be used to assess publication bias. Data will be analysed using comprehensive meta-analysis version 2 software. P<0.05 will be considered significant.

### Analysis of subgroups or subsets

The following subgroup analyses will be carried out:

Overall prevalence of MS and its sensitivity analysis;

Prevalence of MS based on region, province, study design, and year of study;

Prevalence of MS based on gender;

Overall incidence of MS and its sensitivity analysis;

Incidence of MS based on region, province, study design, and year of study;

Incidence of MS based on gender;

The meta-regression diagram for prevalence and incidence of MS based on the year;

Publication bias in the studies of incidence and prevalence;

Result of GRADE assessment of confidence in estimates of effect (Grading of evidence);

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### Anticipated or actual start date

17 April 2018

### Anticipated completion date

22 November 2018

### Funding sources/sponsors

None

### Conflicts of interest

None known.

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## Language

English

## Country

Iran

## Stage of review

Review\_Ongoing

## Subject index terms status

Subject indexing assigned by CRD

## Subject index terms

Humans; Iran; Multiple Sclerosis; Prevalence

## Date of registration in PROSPERO

08 November 2018

## Date of publication of this version

04 December 2018

## Details of any existing review of the same topic by the same authors

## Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
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

## Versions

08 November 2018

04 December 2018

## PROSPERO

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