

INPLASY202540061
doi: 10.37766/inplasy2025.4.0061
Received: 18 April 2025
Published: 18 April 2025

Carbajal-Galarza, M; Calizaya-Madariaga, I; Vera-Grandez, D.

Corresponding author:
Meiling Carbajal-Galarza

meiling.carbajal.g@upch.pe

Author Affiliation:
Universidad Peruana Cayetano
Heredia.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202540061

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 18 April 2025 and was last updated on 18 April 2025.

INTRODUCTION

Review question / Objective To estimate the prevalence of depression in MS patients in Latin America.

Rationale There is limited information about depression in MS patients in LATAM. This region has intrinsic factors such as poor access to healthcare services, a higher stigma for mental disorders compared to high-income countries, and socioeconomic barriers that negatively affect the treatment of depression, and this is further intensified in patients with MS.

Condition being studied Multiple Sclerosis: Autoimmune disorder mainly affecting young adults and characterized by destruction of myelin in the central nervous system. Clinical manifestations include visual loss, extra-ocular movement disorders, paresthesias, loss of sensation, weakness, dysarthria, spasticity, ataxia, and bladder dysfunction.

Depression: An affective disorder manifested by either a dysphoric mood or loss of interest or pleasure in usual activities. The mood disturbance is prominent and relatively persistent.

METHODS

Search strategy

1. PUBMED:
Topic 1: 628,269
((((((Depression[MeSH Terms]) OR (depressive disorder[MeSH Terms]))OR (depressive disorder, major[MeSH Terms])) OR (depressive disorders[MeSH Terms])) OR (Major depression[Title/Abstract])) OR (depression[Title/Abstract])) OR (depressed[Title/Abstract])) OR (depressive symptoms[Title/Abstract])) OR (major depressive disorder[Title/Abstract])
Topic 2: 540,762
((((((multiple sclerosis[MeSH Terms]) OR (acute relapsing multiple sclerosis[MeSH Terms])) OR (chronic progressive multiple sclerosis[MeSH Terms])) OR (ms multiple sclerosis[MeSH Terms]))

OR (multiple sclerosis, acute fulminating[MeSH Terms])) OR (multiple sclerosis[Title/Abstract])) OR (MS[Title/Abstract])

Topic 3: 1,342,911

("latin america"[MeSH Terms] OR "latin america"[Title/Abstract] OR "latinamerica"[Title/Abstract] OR "latinoamerica"[Title/Abstract] OR "Hispanoamerica"[Title/Abstract] OR "iberoamerica"[Title/Abstract] OR "iberoamerica"[Title/Abstract] OR "panamerican"[Title/Abstract] OR "central america"[MeSH Terms] OR "central america"[Title/Abstract] OR "centroamerica"[Title/Abstract] OR "mesoamerica"[Title/Abstract] OR "mesoamerica"[Title/Abstract] OR "middle america"[Title/Abstract] OR "south america"[MeSH Terms] OR "south america"[Title/Abstract] OR "southamerica"[Title/Abstract] OR "sudamerica"[Title/Abstract] OR "America del sur"[Title/Abstract] OR "caribbean region"[MeSH Terms] OR "Caribbean"[Title/Abstract] OR "caribe"[Title/Abstract] OR "west indies"[MeSH Terms] OR "west indi"[Title/Abstract] OR "antill"[Title/Abstract] OR "indians, south american"[MeSH Terms] OR "indians, central american"[MeSH Terms] OR "amerindian"[Title/Abstract] OR "Indians"[Title/Abstract] OR "american indian"[Title/Abstract] OR "native america"[Title/Abstract] OR "patagoni"[Title/Abstract] OR "Andes"[Title/Abstract] OR "andean"[Title/Abstract] OR "amazon"[Title/Abstract] OR "argentin"[Affiliation] OR "argentin"[Title/Abstract] OR "bolivia"[Affiliation] OR "bolivia"[Title/Abstract] OR "brazil"[Affiliation] OR "brasil"[Title/Abstract] OR "brasil"[Title/Abstract] OR "colombia"[Affiliation] OR "colombia"[Title/Abstract] OR "chile"[Affiliation] OR "chile"[Title/Abstract] OR "ecuador"[Affiliation] OR "ecuador"[Title/Abstract] OR "guiana"[Affiliation] OR "guiana"[Title/Abstract] OR "guyan"[Affiliation] OR "guyan"[Title/Abstract] OR "paraguay"[Affiliation] OR "paraguay"[Title/Abstract] OR "peru"[Affiliation] OR "peru"[Title/Abstract] OR "surinam"[Affiliation] OR "surinam"[Title/Abstract] OR "uruguay"[Affiliation] OR "uruguay"[Title/Abstract] OR "venez"[Affiliation] OR "venez"[Title/Abstract] OR "belize"[Affiliation] OR "belize"[Title/Abstract] OR "costa ric"[Affiliation] OR "costaric"[Affiliation] OR "costa ric"[Title/Abstract] OR "costaric"[Title/Abstract] OR "salvador"[Affiliation] OR "salvador"[Title/Abstract] OR "guatemala"[Affiliation] OR "guatemala"[Title/Abstract] OR "hondur"[Affiliation] OR "hondur"[Title/Abstract] OR "nicaragu"[Affiliation] OR "nicaragu"[Title/

Abstract] OR "panam"[Affiliation] OR "panam"[Title/Abstract] OR "mexico"[MeSH Terms] OR "mexic"[Affiliation] OR "mexic"[Title/Abstract] OR "mejic"[Title/Abstract] OR "baham"[Affiliation] OR "baham"[Title/Abstract] OR "cuba"[Affiliation] OR "cuba"[Title/Abstract] OR "dominic"[Affiliation] OR "dominic"[Title/Abstract] OR "haiti"[Affiliation] OR "haiti"[Title/Abstract] OR "jamaic"[Affiliation] OR "jamaic"[Title/Abstract] OR "puerto rico"[MeSH Terms] OR "puerto ric"[Title/Abstract] OR "puertoric"[Title/Abstract])) NOT (systematic review[Publication Type])) NOT (review[Publication Type])) NOT (protocol[Publication Type])

Total: 321

((((((((((Depression[MeSH Terms] OR (depressive disorder[MeSH Terms]))OR (depressive disorder, major[MeSH Terms])) OR (depressive disorders[MeSH Terms])) OR (Major depression[Title/Abstract])) OR (depression[Title/Abstract])) OR (depressed[Title/Abstract])) OR (depressive symptoms[Title/Abstract])) OR (major depressive disorder[Title/Abstract])) AND (((((((multiple sclerosis[MeSH Terms] OR (acute relapsing multiple sclerosis[MeSH Terms])) OR (chronic progressive multiple sclerosis[MeSH Terms])) OR (ms multiple sclerosis[MeSH Terms])) OR (multiple sclerosis, acute fulminating[MeSH Terms])) OR (multiple sclerosis[Title/Abstract])) OR (MS[Title/Abstract])) AND ("latin america"[MeSH Terms] OR "latin america"[Title/Abstract] OR "latinamerica"[Title/Abstract] OR "latinoamerica"[Title/Abstract] OR "Hispanoamerica"[Title/Abstract] OR "iberoamerica"[Title/Abstract] OR "iberoamerica"[Title/Abstract] OR "panamerican"[Title/Abstract] OR "central america"[MeSH Terms] OR "central america"[Title/Abstract] OR "centroamerica"[Title/Abstract] OR "mesoamerica"[Title/Abstract] OR "mesoamerica"[Title/Abstract] OR "middle america"[Title/Abstract] OR "south america"[MeSH Terms] OR "south america"[Title/Abstract] OR "southamerica"[Title/Abstract] OR "sudamerica"[Title/Abstract] OR "America del sur"[Title/Abstract] OR "caribbean region"[MeSH Terms] OR "Caribbean"[Title/Abstract] OR "caribe"[Title/Abstract] OR "west indies"[MeSH Terms] OR "west indi"[Title/Abstract] OR "antill"[Title/Abstract] OR "indians, south american"[MeSH Terms] OR "indians, central american"[MeSH Terms] OR "amerindian"[Title/Abstract] OR "Indians"[Title/Abstract] OR "american indian"[Title/Abstract] OR "native america"[Title/Abstract] OR "patagoni"[Title/Abstract] OR "Andes"[Title/Abstract] OR "andean"[Title/Abstract] OR "amazon"[Title/

Abstract] OR "argentin*" [Affiliation] OR "argentin*" [Title/Abstract] OR "bolivia*" [Affiliation] OR "bolivia*" [Title/Abstract] OR "brazil*" [Affiliation] OR "brasil*" [Affiliation] OR "brazil*" [Title/Abstract] OR "brasil*" [Title/Abstract] OR "colombia*" [Affiliation] OR "colombia*" [Title/Abstract] OR "chile*" [Affiliation] OR "chile*" [Title/Abstract] OR "ecuador*" [Affiliation] OR "ecuador*" [Title/Abstract] OR "guiana*" [Affiliation] OR "guiana*" [Title/Abstract] OR "guyan*" [Affiliation] OR "guyan*" [Title/Abstract] OR "paraguay*" [Affiliation] OR "paraguay*" [Title/Abstract] OR "peru*" [Affiliation] OR "peru*" [Title/Abstract] OR "surinam*" [Affiliation] OR "surinam*" [Title/Abstract] OR "uruguay*" [Affiliation] OR "uruguay*" [Title/Abstract] OR "venez*" [Affiliation] OR "venez*" [Title/Abstract] OR "belize*" [Affiliation] OR "belize*" [Title/Abstract] OR "costa ric*" [Affiliation] OR "costaric*" [Affiliation] OR "costa ric*" [Title/Abstract] OR "costaric*" [Title/Abstract] OR "salvador*" [Affiliation] OR "salvador*" [Title/Abstract] OR "guatemala*" [Affiliation] OR "guatemala*" [Title/Abstract] OR "hondur*" [Affiliation] OR "hondur*" [Title/Abstract] OR "nicaragu*" [Affiliation] OR "nicaragu*" [Title/Abstract] OR "panam*" [Affiliation] OR "panam*" [Title/Abstract] OR "mexico" [MeSH Terms] OR "mexic*" [Affiliation] OR "mexic*" [Title/Abstract] OR "mejic*" [Title/Abstract] OR "baham*" [Affiliation] OR "baham*" [Title/Abstract] OR "cuba*" [Affiliation] OR "cuba*" [Title/Abstract] OR "dominic*" [Affiliation] OR "dominic*" [Title/Abstract] OR "haiti*" [Affiliation] OR "haiti*" [Title/Abstract] OR "jamaic*" [Affiliation] OR "jamaic*" [Title/Abstract] OR "puerto rico" [MeSH Terms] OR "puerto ric*" [Title/Abstract] OR "puertoric*" [Title/Abstract])) NOT (systematic review[Publication Type])) NOT (review[Publication Type])) NOT (protocol[Publication Type])

2. LILACS: 307

((depression) OR (("depressive disorder") OR (depressive AND disorder) OR ("major depression") OR (major AND depression)) OR ("depressive symptoms") OR (depressive AND symptoms)) OR (depressed)) AND (((multiple sclerosis) OR (multiple AND sclerosis)) OR (MS) OR (acute relapsing multiple sclerosis) OR (chronic progressive multiple sclerosis))).

Participant or population

_ Adult patients (≥18 years of age) with diagnosis of Multiple Sclerosis.
_ Patients with diagnosis of depression by standardized diagnostic criteria, including the

Diagnostic and Statistical Manual of Mental disorders (DSM IV), the International Classification of Diseases (ICD 10), Patient Health Questionnaire for Depression (PHQ-9) or Beck Depression Inventory.

_ Participants living in Latin America, including North and Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama), South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela), and the Caribbean (Cuba, Dominican Republic, Haiti, Jamaica, Bahamas). In the case of multicenter studies that included Latin America countries, they were included only if the results were disaggregated and differentiated by country.

Intervention None.

Comparator None.

Study designs to be included Original research articles, including RCTs or observational studies of adult patients (≥18 years of age) with diagnosis of Multiple Sclerosis.

Eligibility criteria

Inclusion criteria
Original research articles including RCTs or observational studies of adult patients (≥18 years of age) with diagnosis of Multiple Sclerosis.

Patients with diagnosis of depression by standardized diagnostic criteria, including the Diagnostic and Statistical Manual of Mental disorders (DSM IV), the International Classification of Diseases (ICD 10), Patient Health Questionnaire for Depression (PHQ-9) or Beck Depression Inventory.

Studies that provide of sufficient data to calculate prevalence rates e.g. sample size and number or percentages of individuals with depression.

Availability of full text (e.g., peer-reviewed, and preprints)

Articles with participants living in Latin America, including North and Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama), South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela), and the Caribbean (Cuba, Dominican Republic, Haiti, Jamaica, Bahamas). In the case of multicenter studies that included Latin America countries, they were included only if the results were disaggregated and differentiated by country.

Exclusion criteria

Case reports, editorials, conference presentations, reviews and letters to the editor.

Studies that did not provide sufficient information to calculate the prevalence of depression. Studies that only included patients with Clinical Isolated Syndrome.

Information sources

Pubmed
Lilacs.

Main outcome(s) Prevalence rate.

Additional outcome(s) None.

Data management The reference management software, Rayyan, will be used to help upload, store and select the literature results. For each database, a separate library group will be created to keep all original search results. All separate library group copies will then merge into a new library group and duplicate checking will be carried out.

Quality assessment / Risk of bias analysis We will assess the risk of bias using Newcastle-Ottawa quality assessment scale (NOS) for cohort studies and adapted Newcastle-Ottawa quality assessment scale (NOS) for case series. Scoring stars of 7–9, 5–6, and 0–4 indicate good, moderate, and poor quality respectively.

If possible, the quality of evidence will be assessed using the GRADE approach for each outcome using the GRADEpro tool. This system considers the risk of bias within the study, the consistency of the effect, indirect evidence, precision of the effect estimates, and publication bias. The overall quality of the evidence will be rated at four levels: high, moderate, low, and very low.

Strategy of data synthesis We will provide a qualitative synthesis, in text and table, to summarize the main results of the selected publications. A narrative synthesis will be included to demonstrate the findings, structured around the general characteristics of the study, characteristics of the target population, details of the intervention, and types of outcomes. We will check the heterogeneity of the included studies by performing the I² statistical test (high levels of heterogeneity: I² ≥ 75%). For studies with sufficient data and homogeneity in terms of interventions and outcomes, we will synthesize the results through meta-analyses using RStudio. A meta-analysis of proportions will be conducted for single-arm studies, applying a random effects model. Forest plots will be generated for each outcome.

Subgroup analysis None.

Sensitivity analysis None.

Language restriction None.

Country(ies) involved Peru.

Keywords 'Depression', 'Depressive Disorder', 'Major Depression', 'Multiple Sclerosis', 'MS', and 'Latin America'.

Dissemination plans The findings of this systematic review and meta-analysis will be submitted for publication in a peer-reviewed journal relevant to neurology, psychiatry, or public health.

Contributions of each author

Author 1 - Meiling Carbajal-Galarza - Author 1 participated in the screening, extraction and analysis phase. Also, she will collaborate writing the manuscript.

Email: meiling.carbajal.g@upch.pe

Author 2 - Irving Calizaya-Madariaga - Author 2 participated in the screening, extraction phase and will collaborate writing the manuscript.

Email: irving.calisaya@upch.pe

Author 3 - Daniel Vera Grandez - Author 3 participated in the screening, extraction phase and will collaborate writing the manuscript.

Email: danielveragrandez@gmail.com