Prevalence of depression in Latin America and the Caribbean: protocol for a systematic review and meta-analysis

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ABSTRACT

Objective: The objective of this review is to evaluate the best available evidence to determine the prevalence of depression in the general population of Latin America and the Caribbean countries.

Introduction: Depression is a common mental disorder that affects quality of life and has been ranked as the largest contributor to non-fatal health loss. Knowledge of this disorder serves as a relevant instrument for policy makers and for the reassignment of public health resources. Although the prevalence of depression is well documented in high-income countries, little is known about the prevalence in Latin America and the Caribbean.

Inclusion criteria: This review will include studies that report the prevalence of depression in the general adult (14 years and older) population of countries in Latin America and the Caribbean. Non-representative subsets of the population will be excluded.

Methods: The search strategy will be designed to obtain both published and unpublished studies. Information sources include PubMed, PsycINFO, Cochrane CENTRAL, and SciELO. Sources of unpublished studies include literature from government departments, international agencies, and academic institution repositories or websites. Eligible studies will be critically appraised for methodological quality. Prevalence estimates will be statistically pooled in a meta-analysis after heterogeneity interpretation; data not appropriate for pooling will be reported in a narrative review. Finally, risk of publication bias will be studied via funnel plot analysis and the Egger test.

Systematic review registration number: PROSPERO (CRD42019143054)

Keywords: depression; epidemiology; Latin America and the Caribbean; major depressive disorder; prevalence


Introduction

Depression is a common mental disorder that affects psychosocial functioning, diminishes quality of life, and, in its most severe form, can even lead to suicide and an increased risk of mortality.¹² The proportion of the global population with depression has been estimated to be 4.4%, with it more common among females (5.1%) than males (3.6%).³ Depression often runs a chronic course and can substantially impair an individual’s occupational potential.⁴ Depressive disorders result in disability that can be measured at an individual and population level, classified as moderate to severely disabling.⁵ The 2017 Global Burden of Disease study identified depressive disorders as the third-leading cause of disability for women and the fifth for men,⁶ and the World Health Organization (WHO) predicted that depressive disorders would rank first by 2030.⁷ Depressive disorders represent the largest contributor to non-fatal health loss, accounting for 7.5% of all years lived with disability,⁷ with more than 80% of the non-fatal disease burden occurring in low- and middle-income countries (LMICs).⁸ These findings have made depression one of the priority conditions covered by the WHO’s Mental Health Gap Action Programme.⁹

Notably, estimates of the 12-month prevalence of a major depressive disorder are similar between
high-income countries (5.5%) and LMICs (5.9%). These findings allow us to infer that the cause of depression is complex and multifactorial; therefore, it is not a simple consequence of modern-day lifestyle in developed countries, nor poverty in LMICs.

Latin America and the Caribbean (LAC) is a geographical area with a population of more than 658 million inhabitants (8.6% of the total world population). The United Nations has estimated its annual population growth rate at 0.97% and projects it will reach 721 million by 2030. Latin America and the Caribbean includes 33 countries, mainly of low and middle income. This region presents an increased disability due to depression; depressive disorders are the largest cause of disability, particularly among those aged 15 to 49 years. Therefore, prevention, treatment, and rehabilitation of depressive disorders constitute a major issue for public health policies in LAC.

Given that depression affects so many people and causes an immense economic burden to patients, families, and societies, it is of benefit to society to direct major efforts towards its prevention and management. The successful planning and implementation of prevention and early interventions to improve health services for people with depressive disorders in LAC require reliable, up-to-date estimates of the proportion of the general population affected by them. Epidemiological studies on the prevalence of depression in the community serve as instruments to provide relevant data to authorities and policy makers, allowing them to integrate mental health into public health policy and to prioritize, assign, and redistribute resources to confront the challenge depression represents for mental care systems. This specially affects LMICs, which is the primary description for countries in LAC, where there are limited health care resources.

The first step towards a solution to this issue is to estimate the prevalence of depressive disorders in LAC. Unfortunately, the way in which research on psychiatric epidemiology has been conducted in Latin American countries has impaired results from being systematized and widely known. There are few community-based studies on mental health disease, and of those available, not all comply with the same study designs and diagnostic criteria, thus limiting future comparisons. Another issue is that some of these studies are not published in international journals, which makes them harder to obtain. Moreover, there is limited access to grant opportunities and inadequate budgets for the production of research, even in relatively rich LAC countries. Fortunately, in recent years, some countries have begun to conduct epidemiological studies of mental health disorders based on international diagnostic criteria, such as the International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM). Also, the use of structured instruments, such as the Diagnostic Interview Schedule (DIS) or the Composite International Diagnostic Interview (CIDI), have improved the reliability and validity of the psychiatric diagnosis established on these studies.

Preliminary searches of the JBI Database of Systematic Reviews and Implementation Reports, PsyCINFO, Cochrane Database of Systematic Reviews, SciELO, and PubMed found no existing systematic reviews or meta-analysis on the prevalence of depression in LAC. A search in PROSPERO found no other registered protocols on the prevalence of depression in LAC. There have been several reports produced by Latin American governments/international or regional agencies, but they lack the design of systematic reviews, limiting the extent of studies reported.

The purpose of this systematic review is to analyze the available epidemiological studies of depression prevalence in the general population of countries encompassing LAC and to generate a meta-analysis.

**Review question**

What evidence is available to determine the prevalence of depression in the adult general population of LAC countries?

**Inclusion criteria**

**Population**

This review will consider studies that include people aged 14 years and older, without gender restriction. The participants of the included studies will be representative of the general population of a region or country studied. Non-representative subsets of the population, such as samples based on inpatient admissions, institutionalized groups, or any other specific kind of group (eg, exposed to natural disasters), will be excluded. The representation of the sample will be determined by participant recruitment and sampling methods indicated in the study reviewed.
Condition
This review will include studies that investigate the prevalence of depression, defined according to validated diagnostic criteria, such as the ICD, DSM, or Catego Program of clinical classification. Included studies must use validated diagnostic instruments, such as CIDI, Mini-International Neuropsychiatric Interview, or DIS in any of their versions. Eligible studies must report the specific outcome as depression, depressive disorder/episode/state, or major depressive disorder or episode. Eligible studies will specify the period of the prevalence of depression obtained, which may include the point (eg, last seven days, two weeks, or one month), period (eg, six months, 12 months), or lifetime.

Context
This review will include studies that report the prevalence of depression in the general population of countries in LAC. Therefore, it will exclude studies where participants are selected from specific communities, such as prisons, schools, universities, mental health clinics, hospitals, or any other subpopulation where the prevalence of depression may not be representative of the general population of the country.

Types of studies
This review will consider observational study designs: population-based cross-sectional, prevalence, or cohort studies containing original data on prevalent cases of depression. Secondary studies that report results from primary, population-based studies of prevalence of depression in LAC not published elsewhere will be considered for inclusion. No restriction to language of publication will be set. Studies will also not be excluded according to their date of publication in order to provide an overview of the current epidemiological picture with a historical perspective.

Methods
The proposed systematic review has been registered in PROSPERO (CRD42019143054) and will be conducted in accordance with the JBI methodology for systematic reviews of prevalence and incidence. The Meta-analysis of Observational Studies in Epidemiology (MOOSE) guidelines and the JBI checklist will be followed.

Search strategy
The search strategy will be designed to obtain both published and unpublished studies and reports. An initial limited search of PubMed was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were then used to develop a full search strategy for PubMed (see Appendix I). The search strategy, including all included keywords and index terms, will be adapted for each included information source (ie, PsycINFO, Cochrane CENTRAL, and SciELO). A three-step search strategy will be used. First, each electronic database will be searched using a specific search string, designed in consultation with a research librarian, that aims to target three key concepts: i) psychiatric diagnosis (eg, depressive disorder); ii) type of study (eg, epidemiology); and iii) location/catchment area (eg, Latin America). Second, the reference lists of all included reports and reviews will be searched for additional studies that might have not been obtained through the first step. Thirdly, a search for additional studies produced by LAC governments, international agencies, or local academic institutions will be conducted using similar keywords from the search strings. The websites of every LAC health or social development government division and of regional/international health or development agencies dedicated to promoting mental health will be reviewed to identify available reports.

Keywords to be used for each of the key concepts are as follows: i) type of study: community, epidemiology, population, prevalence, prospective, survey; ii) diagnosis: affective disorder, depression, depressive disorder, mental disorder, MDD, mental illness, mood disorder, psychiatric distress, psychiatric disorder, psychiatric illness, psychological distress; iii) catchment area: Americas, Antigua, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Caribbean, Central America, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Latin America, Mexico, Nicaragua, Panama, Paraguay, Peru, Salvador, South America, Suriname, Trinidad, Tobago, Uruguay, and Venezuela.

Information sources will include electronic databases and contact with study authors. In consultation with a health sciences librarian, the databases to be searched include MEDLINE (PubMed),
PsycINFO (EBSCO), Cochrane Central Register of Controlled Trials (CENTRAL) and the Scientific Electronic Library Online (SciELO). Sources of unpublished studies and gray literature to be searched include literature from government departments, international agencies, and academic institution repositories or websites.

**Study selection**

Following the search, all identified citations will be collated and uploaded into EndNote X9 (Clarivate Analytics, PA, USA) and duplicate citations removed. Potentially relevant studies will be retrieved in full and their citation details imported into Microsoft Excel (Redmond, Washington, USA); further manual screening for undetected duplicates will be made. Three independent reviewers will conduct a three-stage selection process. First, the titles of all identified citations will be screened against the inclusion criteria for the review. In a second stage, the abstracts of titles selected will be screened against the inclusion criteria. Finally, the full text of selected citations will be retrieved against the inclusion criteria. The results of the search will be reported in full in the final systematic review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.

**Assessment of methodological quality**

Eligible studies will be critically appraised for methodological quality by two independent reviewers using the standardized critical appraisal instrument for prevalence studies developed by JBI. They will score each study regarding quality criteria and derive an overall score. Any disagreements that arise during methodological quality assessment will be resolved through discussion or with a third reviewer. The results of critical appraisal will be reported in narrative and tabular formats. All studies that meet the inclusion criteria, regardless of the results of their methodological quality score, will undergo data extraction and synthesis (where possible). The review findings and recommendations will be interpreted with consideration of the methodological quality of the included articles. Authors of papers will be contacted to request missing or additional data for clarification, where required.

**Data extraction**

Data will be extracted and managed in Microsoft Excel by two independent reviewers using an adapted version of the JBI extraction form for prevalence studies. The data extracted will include specific details about the populations, condition, outcomes, and other characteristics including the following.

i) General information: author(s) name(s), journal/book/report title, chapter/article title, year of publication, volume number/book chapter, article number or pagination, and publication type or source of data (ie, book, journal, or report);

ii) Study characteristics: study design, sampling method, country and city of study, date(s) of fieldwork, area (ie, urban or rural), characteristics of the study population (eg, age, gender), sample size, diagnostic classification system, and diagnostic instrument used;

iii) Outcome information: response rate, diagnostic outcome, type of prevalence (lifetime, point, or period), and reported prevalence per 100 or 1000 with standard deviation or confidence interval if reported.

Any disagreements on particular study details to extract will be resolved through discussion or with a third reviewer. If required, the authors of the papers will be contacted to request missing or additional data.

**Data synthesis**

The review will report the characteristics of included studies in summary tables and narrative text. Prevalence data extracted from the included studies will, where possible, be pooled in a statistical meta-analysis using a Microsoft Excel spreadsheet step-by-step guide. Selected prevalence estimates will be statistically combined to obtain a pooled prevalence estimate, and statistical heterogeneity will be quantified using the $I^2$ statistic test. Heterogeneity levels will be interpreted based on Higgins et al. categorization. Calculation and interpretation of the
pooled prevalence estimates will be carried out following a six-step guide.\textsuperscript{26}

i) Compute the variance of each prevalence estimate;

ii) Compute weights for each of the prevalence estimates;

iii) Compute each weighted effect size, which represents the weighted prevalence estimate, by multiplying each prevalence estimate by the weight;

iv) Quantifying the level of heterogeneity among the prevalence estimates within the meta-analysis by calculating Cochran’s $Q$ and $I^2$;

v) If heterogeneity is not high (ie, $I^2 < 75\%$), the fixed effects model will be used, assuming that the size of the weighted effect is the same for each of the prevalence estimates; and

vi) If heterogeneity is high (ie, $I^2 \geq 75\%$), the random effects model will be used.

Pooled prevalence estimates (with their corresponding 95\% CI), the value of $I^2$, and the interpretation of the level of heterogeneity among the estimates used to calculate it will be reported for each type of prevalence (ie, lifetime, 12 months, six months, and point) and included in their respective forest plots. Depending on quantity and quality of data, sub-group analysis will be made by sex, age, country, classification system, and Human Development Index of country. Where statistical pooling in a meta-analysis is not possible, the findings will be presented in narrative form, including tables and figures to aid in data presentation. Publication bias will be assessed by funnel plot using the logit of the prevalence and Egger’s regression asymmetry test.\textsuperscript{26}

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References


Appendix I: Search strategy

Medline (PubMed)

Search in PubMed conducted on 1st September 2019

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No data or language limitation