INPLASY

Impact of climate change on the occurrence of canine visceral leishmaniasis in non-endemic areas: A systematic review

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202690049

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 September 2026 and was last updated on 11 September 2026.

INTRODUCTION

Review question / Objective Review question: What is the impact of climate change on the increased occurrence of canine visceral leishmaniasis in non-endemic areas?
Objective: To synthesize the evidence regarding the impact of climate change on the occurrence and expansion of canine visceral leishmaniasis in previously non-endemic areas.

Condition being studied Canine visceral leishmaniasis is a chronic zoonotic disease caused by protozoa of the genus Leishmania and transmitted by phlebotomine sand flies. Dogs are the main domestic reservoir of the parasite and play an important role in the epidemiology and transmission of the disease to humans. The disease is widely distributed in endemic regions and has been increasingly reported in new geographic areas.

METHODS

Participant or population Domestic dogs (Canis lupus familiaris) of any breed, sex, or age living in areas previously classified as non-endemic for canine visceral leishmaniasis.

Intervention Not applicable.

Comparator When available, the comparator will include dogs living in areas or during periods with lower or no exposure to climate-related changes, or areas with different climatic conditions. Studies without a specific comparator group will also be eligible if they provide relevant data on the impact of climate change on the occurrence or geographic expansion of canine visceral leishmaniasis in previously non-endemic areas.

Study designs to be included Observational studies, including ecological, time-series, and spatial or spatiotemporal studies.

Eligibility criteria Studies investigating the impact of climate change or climate-related factors (such as temperature, precipitation, humidity, or extreme weather events, among others) on the occurrence or geographic expansion of canine visceral leishmaniasis in previously non-endemic areas will be eligible. Reviews, editorials, letters, experimental studies, and studies that do not provide specific data on dogs will be excluded.

Information sources The following electronic databases will be searched: MEDLINE via PubMed, Web of Science, Scopus, Embase, and CABI Digital Library.

Main outcome(s) The main outcome will be the occurrence and geographic expansion of canine visceral leishmaniasis in previously non-endemic areas. Outcomes may include incidence, prevalence, number or rate of cases, emergence of autochthonous cases, and spatial or geographic expansion of the disease. Effect measures may include risk ratios, odds ratios, incidence rate ratios, prevalence ratios, regression coefficients, correlation measures, or other estimates of association between climate-related factors and canine visceral leishmaniasis.

Quality assessment / Risk of bias analysis The methodological quality and risk of bias of the included studies will be assessed using the Joanna Briggs Institute (JBI) critical appraisal tools appropriate for each study design.

Strategy of data synthesis The data will be synthesized qualitatively, with descriptions covering study design, geographic region, climate-related exposure, the outcome assessed, estimated measures of occurrence and effect, and key results. The direction and magnitude of associations between climate-related factors and the occurrence or geographic expansion of canine visceral leishmaniasis will be summarized. If a sufficient number of studies with comparable exposures, outcomes, and measures of occurrence and effect are identified, a meta-analysis using a random-effects model will be conducted. Statistical heterogeneity will be assessed using the I^2 statistic and Cochran's Q test.

Subgroup analysis If sufficient data are available, subgroup analyses will be conducted based on geographic region, type of climate-related exposure, study design, and outcome measure. Additional subgroup analyses may be performed based on other relevant characteristics identified during the review.

Sensitivity analysis If a meta-analysis is conducted, sensitivity analyses will be performed whenever possible, excluding studies at high risk of bias and evaluating the influence of individual studies on the pooled estimates.

Language restriction No language restrictions will be applied.

Country(ies) involved Brazil and the United States of America.

Keywords Canine visceral leishmaniasis; Climate change; Geographic expansion; Non-endemic areas; Phlebotomine sand flies; Vector-borne diseases.

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