

Estimating the Burden: A Systematic Review Protocol on Hypertension Prevalence in Filipino Americans

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Review title

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Abstract

Objective: This review aims to synthesize the best available evidence on the point prevalence of hypertension among Filipino American adults.

Introduction: Filipino Americans experience disproportionately high rates of hypertension, increasing their risk of cardiovascular complications, disability, premature mortality, and rising healthcare costs. Accurately estimating prevalence is essential for understanding disease burden and guiding healthcare planning and policy.

Inclusion criteria: This review will consider observational studies with more than 50 participants reporting on the point prevalence of hypertension in Filipino Americans aged 18 years and older residing in the United States. Studies on hypertensive disorders of pregnancy will be excluded.

Methods: The review will follow the JBI methodology for systematic reviews of prevalence and incidence. The databases to be searched include MEDLINE (Ovid), Embase, Web of Science, and Scopus. Two reviewers will independently conduct study selection, critical appraisal, and data extraction. Methodological quality will be evaluated using the JBI critical appraisal tools. Pooled prevalence estimates with 95% confidence intervals will be calculated using a random-effects model. Statistical heterogeneity will be evaluated, and, where possible, subgroup analyses will be conducted based on age group, gender, geographic region, time of data collection, and hypertension stage. When statistical pooling is not feasible, results will be presented in narrative form, supported by tables and figures.

Review registration: PROSPERO #CRD42025649770

Keywords: Filipino Americans; hypertension; point prevalence, systematic review

Introduction

Hypertension (HTN) is broadly defined as persistently elevated blood pressure (BP) across time and in various settings.¹ It is one of the most prevalent chronic diseases in the United States (U.S.), affecting approximately 45.1% of American adults based on a BP threshold of $\geq 130/80$ mmHg.² The rates of HTN continue to rise, driven by a complex interplay of factors, including sedentary lifestyles, poor dietary habits, an aging population, and the obesity epidemic.²

Hypertension is a major modifiable risk factor for cardiovascular, cerebrovascular, and renal diseases.³ The risk of coronary artery disease, stroke (ischemic or hemorrhagic), and chronic kidney disease (CKD) increases proportionally with rising BP levels.³ In the United States, HTN accounts for 25% of cardiovascular events, approximately 50% of ischemic strokes, and up to 70% of hemorrhagic strokes.^{3,4} It is also the second leading cause of CKD, responsible for about 34% of end-stage renal disease cases.³ The underlying pathogenesis of these complications is driven by a combination of mechanical vascular stress, endothelial dysfunction, oxidative stress, and neurohormonal activation – processes that accelerate atherosclerosis, promote ischemia, and lead to structural and functional damage to the target organs.^{3,5} Ultimately, HTN is a leading contributor to all-cause and cardiovascular mortality in the United States., accounting for over 50% of deaths from heart disease and stroke among affected individuals.⁶

The economic burden of HTN on the U.S. healthcare system is substantial. HTN-related costs are estimated at \$219 billion annually, with an average expenditure of \$2,759 per affected individual.⁷ The economic impacts are expected to increase dramatically in the coming decades due to the increasing prevalence of this condition. Given their significant contribution to morbidity, mortality, and healthcare expenditures, HTN remains a major public health concern.

Although HTN affects individuals across all racial and ethnic groups, certain populations bear a disproportionate burden. One such group is Filipino Americans, individuals of Filipino ancestry residing in the U.S.^{8,9} Filipino Americans comprise approximately 4.1 million people, accounting for 17% of the Asian American population.¹⁰ As of 2019, Filipino Americans were evenly split between U.S.-born and foreign-born individuals, with women comprising about 60% of the population.¹¹ The states with the largest Filipino population are California, Hawaii, Texas, Illinois, New York, and Nevada.¹¹

Despite being a relatively small ethnic group in the U.S., Filipino Americans have higher rates of HTN than other Asian American subgroups, non-Hispanic Whites, and Hispanics, with prevalence rates comparable to those of non-Hispanic Blacks.¹² A community-based survey in the New York City

metropolitan area reported the HTN prevalence of 53% among Filipino Americans, surpassing rates observed in non-Hispanic Blacks (43.5%), Asians overall (38.0%), Hispanics (33.0%), and non-Hispanic Whites (27.5%).^{13, 14} Emerging evidence also suggests that Filipino Americans may be at a higher risk for premature HTN compared to other Asian groups.¹⁵ This leads to increased use of healthcare services, including medications, physician visits, and hospitalizations. Hypertension often begins earlier in Filipino adults, especially women under 60, which compounds long-term costs due to prolonged treatment and a higher risk of complications like stroke and heart disease. In recognition of this elevated burden, the American Heart Association (AHA) has identified Filipino Americans as a high cardiovascular risk population.¹¹

Several factors likely contribute to the high prevalence of HTN among Filipino Americans. Genetic susceptibility and family history appear to play a significant role.¹⁶ Non-genetic contributors include elevated rates of obesity (using Asian-specific BMI cutoffs), high dietary sodium intake, often from traditional soy-sauce-based dishes, and physical inactivity.^{9, 13} Acculturation-related changes following immigration and longer duration of residence in the U.S. have also been associated with increased HTN risk.¹⁴ Other social determinants of health, such as financial constraints, language barriers, and limited access to healthcare, further exacerbate this risk.¹⁷

Accurate prevalence estimates of HTN are essential for understanding disease burden and guiding healthcare policy and interventions. Although there are several primary studies on the prevalence of HTN among Filipino Americans,^{9, 12, 13, 18} their results are inconsistent. These discrepancies might stem from variations in study design, population demographics, and data collection methods across various regions and time periods. In addition, the aggregation of health data for all Asian Americans as a single category often obscures subgroup-specific disparities, limiting the visibility of Filipino Americans' unique health challenges.

The lack of consistent Filipino American-specific data hinders healthcare providers' awareness regarding the unique health risks faced by this population, limiting the development of targeted interventions and culturally appropriate health resources. Without clear and consistent estimates, Filipino Americans may remain an underserved population in terms of HTN management, increasing their risk for serious, yet preventable, complications. A systematic review of this topic is needed to consolidate existing evidence and provide accurate prevalence estimates.

A preliminary search of PROSPERO, MEDLINE, the Cochrane Database of Systematic Reviews, and *JB1 Evidence Synthesis* was conducted, but no current or ongoing systematic reviews of this topic were identified. A proposed systematic review will add to the body of knowledge and inform the public, clinicians, healthcare administrators, and public health workers about the prevalence of HTN

among Filipino Americans, ultimately improving awareness and aiding in the planning of disease management services for this population.

Review questions

Among Filipino American adults (Population), what is the pooled point prevalence of hypertension (Outcome) as reported in observational studies (Intervention/Exposure), without a formal comparison group (Comparison)?

Inclusion criteria

Participants

This review will consider studies that include Filipino American individuals of any sex, aged 18 years or older, with a diagnosis of hypertension (HTN), residing in the United States. There is no universally accepted criterion for defining "Filipino American" in research. Epidemiological and clinical studies typically rely on self-identified Filipino heritage, sometimes supplemented by ancestry or nativity information.^{10, 12, 14, 18} Therefore, we will adopt the definition of "Filipino Americans" as used in each primary study. We will extract and document how each study defines this population and assesses the impact of definitional variability during analysis. Studies focusing exclusively on other racial or ethnic groups will be excluded. For studies that include multiple ethnic groups, we will extract prevalence data specific to Filipino Americans when disaggregated data are available.

Conditions

This review will include studies evaluating the prevalence of HTN in Filipino American adults. Blood pressure thresholds for defining HTN vary across professional guidelines, typically ranging from $\geq 130/80$ mmHg to $\geq 140/90$ mmHg.^{1, 3, 19} These differences stem from varying interpretations of epidemiological and clinical data. Most professional guidelines and clinical studies classify individuals as hypertensive if they have a systolic blood pressure (SBP) of ≥ 140 mmHg or a diastolic blood pressure (DBP) of ≥ 90 mmHg or are taking an antihypertensive medication.^{1, 19, 20} The $\geq 140/90$ mmHg threshold is based on longstanding epidemiological evidence linking these levels to increased cardiovascular risk and clinical trial data demonstrating the benefits of antihypertensive therapy above this threshold. Some recent studies have adopted the lower threshold of SBP ≥ 130 mm Hg or

DBP $\geq$ 80 mm Hg in line with the 2017 American College of Cardiology/American Heart Association (ACC/AHA) guideline,³ particularly when evaluating high-risk populations. Nevertheless, the traditional $\geq$ 140/90 mmHg cutoff remains the most widely used definition, because it is a long-standing and pragmatic threshold that has been consistently used in major trials and guidelines for decades, making it the de facto standard for research and surveillance. To ensure consistency and comparability across studies, this review will include studies that define HTN as SBP $\geq$ 140 mmHg or DBP $\geq$ 90 mmHg, or the use of an antihypertensive medication. During data extraction, we will collect information on the specific definitions of HTN used in each included study, and, when available, extract data on HTN severity (stages). While our primary objective is to estimate the overall prevalence of HTN, we acknowledge that its severity is linked to increasing levels of cardiovascular risk, and we will explore this variation where possible.

This review will include studies reporting prevalence estimates of any HTN subtype (i.e., primary or secondary hypertension), as defined by the primary studies. Although primary and secondary HTN differ in their underlying mechanisms, they are often not distinctly classified in the literature, particularly in retrospective or population-based studies. Since this review aims to characterize the overall burden of HTN among Filipino Americans, combining these subtypes under the general category of HTN is appropriate.

We will exclude studies focused on hypertensive disorders of pregnancy, such as chronic hypertension during pregnancy, gestational hypertension, preeclampsia, and chronic hypertension with superimposed preeclampsia, as these conditions are unique to pregnancy and fall outside the scope of this review. Similarly, studies focused exclusively on hypertensive crisis (e.g., hypertensive urgency or emergency) will be excluded, as these represent acute, clinically distinct conditions with different risk factors, pathophysiology, and management approaches.

This review will include studies that report point prevalence estimates, defined as the proportion of Filipino Americans with hypertension at a single, specific point in time. Studies reporting other types of prevalence, such as period prevalence or lifetime prevalence, will be excluded to maintain consistency across studies and because such estimates may introduce variability due to differing recall periods, exposure windows, and study designs.

Context

This review will include community- and clinic-based studies conducted in any state in the United States. Including studies from diverse settings and geographic regions will help ensure a comprehensive and representative understanding of the prevalence of HTN among Filipino Americans. Given the known regional variation in the distribution of Filipino American populations, some geographic areas (western United States, particularly California and Hawaii) may have a greater need for targeted HTN prevention programs. We acknowledge that pooling prevalence estimates across all states may obscure important regional disparities in disease burden. Therefore, during data extraction, we will collect information on the geographic location of each study. Where data permit, we will conduct subgroup analyses to explore regional differences and better inform local health policy and program development.

Types of studies

This review will consider observational studies that report point prevalence estimates of HTN in Filipino American adults. Eligible study designs will include descriptive and analytical cross-sectional studies, as well as cohort studies (prospective or retrospective) that report point prevalence data. To minimize methodological heterogeneity and enhance comparability across studies, we will exclude case-control studies, as these are not typically designed to measure prevalence and often report association metrics (e.g., odds ratios) rather than direct prevalence estimates. Experimental studies and case reports/series will be excluded due to their limited relevance to prevalence estimation. Registry-based studies will be considered only if they clearly report point prevalence data for the population of interest. To further enhance methodological rigor, we will exclude studies with very small sample sizes (fewer than 50 participants), as such studies may provide unrepresentative prevalence estimates.

No restrictions will be placed on publication year during the search phase to ensure comprehensiveness. However, during data synthesis, we will examine temporal trends and consider subgroup analysis by study period (e.g., by decade) if sufficient data are available. This approach allows us to detect and account for changes in prevalence over time and avoid masking recent trends with aggregated long-term averages.

Methods

The proposed systematic review will be conducted in accordance with the JBI methodology²¹ and the JBI-endorsed methodology of systematic reviews of prevalence and cumulative incidence by the PERSyst (Prevalence Estimates Reviews – Systematic Review Methodology Group) group available at <https://persyst.group/>. This protocol has been registered in PROSPERO (#CRD42025649770)

Search strategy

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE (Ovid) will be undertaken, followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. See an example of the MEDLINE (Ovid) search strategy in Appendix I. A second search using all identified keywords and index terms will be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies. Only studies published in English will be considered for inclusion in this review.

The databases to be searched include MEDLINE (Ovid), Embase, Web of Science, and CINAHL (EBSCO). The search for unpublished studies will include the ProQuest Dissertation and Theses Database, the directory of gray literature via the New York Academy of Medicine website, ClinicalTrials.gov, WHO International Clinical Trials Registry Platform (who.int), and open grey.eu, greynet.org, Institute of Medicine reports (nationalacademies.org), Google Scholar/MedNar, websites of the American Heart Association (AHA), Centers for Disease Control and Prevention (CDC), Asian and Pacific Islander American Health Forum (APIAHF).

Study selection

Following the search, all identified citations will be collated and uploaded to EndNote21 (Clarivate Analytics, PA, USA), and duplicates will be removed. Following a pilot test, titles and abstracts will be screened by two independent reviewers (PV, IB) for assessment against the inclusion criteria for the review. Potentially relevant studies will be retrieved in full, and their citation details will be imported into the JBI System for the Unified Management, Assessment, and Review of Information (JBI SUMARI; JBI, Adelaide, Australia).²² The full text of selected citations will be assessed in detail

against the inclusion criteria by two independent reviewers (PV, IB). The systematic review will record and report reasons for excluding full-text studies that do not meet the inclusion criteria. Any disagreements that arise between the reviewers at each stage of the study selection process will be resolved through discussion or with a third reviewer (CH). The search and study selection and inclusion process results 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.²³

Assessment of methodological quality

Eligible studies will be critically appraised by two independent reviewers (PV, IB) at the study level for methodological quality in the review using standardized critical appraisal instruments from JBI for studies reporting prevalence data.²⁴ Authors of papers will be contacted to request missing or additional data for clarification, where required. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer (CH). The critical appraisal results will be reported in a table with an accompanying narrative. All studies, regardless of the results of their methodological quality, will undergo data extraction and synthesis (where possible). The methodological quality assessment will contribute to an evaluation of the quality of the evidence and the impact of bias on the findings. The quality score of each study will be reported in the systematic review.

Data extraction

Data will be extracted from studies included in the review by two independent reviewers (PV, IB) using the standardized JBI data extraction tool. Extracted data will include study characteristics (author, year, study design, and sample size), population characteristics (age, sex, definition of Filipino Americans, cardiovascular comorbidities, nativity [Philippine-born or U.S.-born], and years residing in the U.S.), geographic location (state or region), and specific time of data collection. We will also record details relevant to HTN diagnosis, including diagnostic threshold and severity or stage of hypertension (if reported). The point prevalence estimates of HTN will be extracted. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer (CH). Authors of papers will be contacted up to two times to request missing or additional data, where required.

Data synthesis

Studies will be pooled for statistical meta-analysis, where possible, using PERSyst MA, version 1.0 (<https://persyst.group/persystma/>). Reported prevalence data, which are normally reported as a proportion, will be transformed to logits to improve their statistical properties.²⁴ Although the double arcsine transformation is often recommended for stabilizing variance, particularly when prevalence values approach 0 or 1, the logit transformation remains an acceptable and widely used alternative.²⁵ The logit transformation of proportions (i.e., log-odds) has the advantage of constraining confidence intervals within the [0,1] range, thereby addressing a key limitation of raw proportion meta-analysis.²⁵ While it may inflate variance for studies with very low or very high prevalence estimates, this is less concerning when most included studies report mid-range prevalence values.²⁵ For this reason, we consider the logit transformation a statistically appropriate and justifiable choice for the current review. The weighted summary proportions for HTN with 95% confidence intervals will be calculated using the random-effects model. Although statistical significance will be noted, emphasis will be placed on the precision and range of the confidence intervals, as the primary goal of this review is to estimate the burden of hypertension rather than to test hypotheses.

The results will be graphically presented in a forest plot. Heterogeneity will be assessed statistically through the standard χ^2 and I^2 tests. Subgroup analyses will be conducted, where data permit, to explore sources of heterogeneity in HTN prevalence among Filipino American adults. Analyses will be stratified by age group, gender, geographic location, period of data collection, and hypertension stage. If statistical pooling is not feasible, the findings will be presented narratively, including tables and figures to enhance data presentation, where appropriate. A funnel plot will be generated to assess publication bias if 10 or more studies are included in a meta-analysis. Statistical tests for funnel plot asymmetry (Egger test, Begg test, Harbord test) will be executed as appropriate.

Assessment of the certainty of the findings

To assess the certainty of findings in a systematic review of the prevalence of hypertension and diabetes among Filipino Americans residing in the US, the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach will be employed. This method evaluates the certainty of evidence across five domains: risk of bias, inconsistency, indirectness, imprecision, and publication bias.²⁶ Each domain will be systematically reviewed to determine the overall confidence

in the prevalence estimates. The certainty of evidence will be categorized into four levels: high, moderate, low, and very low.²⁶ This process ensures a transparent and structured evaluation of the findings, providing a robust foundation for understanding the health disparities faced by Filipino Americans.

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Appendix I: Search strategy

Medline (Ovid)

Search conducted August 20, 2025

Search	Query	Records retrieved
1	exp *Hypertension/	251912
2	"hypertens*".ab,kf,ti,tw.	568831
3	((elevat* or high or rais*) adj3 (diastolic or systolic or arterial or blood) adj1 pressure*).ab,kf,ti,tw.	44907
4	"elevated blood pressure".ab,kf,ti,tw.	8680
5	1 or 2 or 3 or 4	612521
6	exp *Prevalence/	945
7	prevalence studies.mp. or exp Cross-Sectional Studies/	556419
8	prevalence.ab,kf,ti,tw.	922354
9	exp Incidence/	324069
10	incidence studies.mp. or exp Cohort Studies/	2778942
11	incidence.ab,kf,ti,tw.	1037774
12	6 or 7 or 8 or 9 or 10 or 11	4599889
13	exp Philippines/eh	985
14	"filipin*".ab,kf,ti,tw.	6320
15	"filipino american*".ab,kf,ti,tw.	303
16	asian american.ab,kf,ti,tw.	4433
17	13 or 14 or 15 or 16	10656
18	5 and 12 and 17	200
19	limit 18 to english language	199