

INPLASY

Prevalence of frailty and pre-frailty in older adults with diabetes mellitus across healthcare settings: a systematic review

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ADMINISTRATIVE INFORMATION

Support - None.

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

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202640106

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 April 2026 and was last updated on 29 April 2026.

INTRODUCTION

Review question / Objective “What is the prevalence of frailty and pre-frailty, as assessed using the frailty phenotype, among older adults (≥ 65 years) with diabetes mellitus across all health care settings?”

“To estimate the prevalence of frailty and pre-frailty, as assessed using the frailty phenotype, among older adults (≥ 65 years) with diabetes mellitus across all health care settings.”

Rationale Clinicians and health care systems worldwide are increasingly challenged by aging populations. Diabetes mellitus (type 1 and type 2) affects up to 30% of individuals aged 65 years and older, representing a major public health concern. Frailty has emerged as a key concept in geriatric care, describing a dynamic state of increased vulnerability to adverse health outcomes due to diminished physiological reserve.

Despite its clinical relevance, substantial uncertainty remains regarding how frailty should be identified, measured, and managed, particularly

among older adults with diabetes. This uncertainty is further compounded by the heterogeneity of frailty definitions and assessment tools used across studies and clinical settings. Among these, the frailty phenotype provides a standardized and widely recognized approach to identifying physical frailty and pre-frailty.

In older adults with diabetes, the coexistence of metabolic dysregulation, chronic inflammation, and functional decline may accelerate the development of physical frailty, potentially leading to worse clinical outcomes, including disability, hospitalization, and mortality. However, the prevalence of physical frailty in this population remains inconsistently reported, particularly across different clinical contexts such as community, outpatient, and hospital settings.

Therefore, a comprehensive evaluation of the prevalence of physical frailty and pre-frailty—specifically assessed using the frailty phenotype—among older adults with diabetes mellitus across diverse clinical contexts is essential. Such evidence can enhance understanding of the burden of frailty in this population and support

more informed clinical decision-making, improved risk stratification, and the development of targeted interventions.

Condition being studied Frailty and pre-frailty, assessed using the Fried frailty phenotype.

METHODS

Search strategy PubMed (MEDLINE)

("Aged"[Mesh] OR elderly[tiab] OR "older adults"[tiab])

AND

("Frailty"[Mesh] OR "Frail Elderly"[Mesh] OR frailty[tiab] OR prefrailty[tiab] OR "pre-frailty"[tiab])

AND

("Diabetes Mellitus"[Mesh] OR diabetes[tiab])

Embase:

('aged'/exp OR elderly:ti,ab OR 'older adult':ti,ab OR 'older adults':ti,ab)

AND

('frailty'/exp OR 'frail elderly'/exp OR frailty:ti,ab OR prefrailty:ti,ab OR 'pre-frailty':ti,ab)

AND

('diabetes mellitus'/exp OR diabetes:ti,ab)

AND

('frailty phenotype':ti,ab OR 'Fried phenotype':ti,ab)

SciELO

(aged OR elderly OR "older adults" OR idosos OR idoso OR ancianos)

AND

(frailty OR prefrailty OR "pre-frailty" OR fragilidade OR fragilidad)

AND

("diabetes mellitus" OR diabetes OR "diabetes mellitus")

Scopus:

TITLE-ABS-KEY (aged OR elderly OR "older adults")

AND

TITLE-ABS-KEY (frailty OR prefrailty OR "pre-frailty")

AND

TITLE-ABS-KEY ("diabetes mellitus" OR diabetes)

Biblioteca Virtual em Saúde (including LILACS)

(MH:"Aged" OR elderly OR "older adults" OR idosos OR idosos OR anciano OR ancianos)

AND

(MH:"Frailty" OR MH:"Frail Elderly" OR frailty OR prefrailty OR "pre-frailty" OR fragilidade OR fragilidad)

AND

(MH:"Diabetes Mellitus" OR diabetes)

AND

("frailty phenotype" OR "fenótipo de fragilidade" OR "fenotipo de fragilidad")

Web of Science

TS=(aged OR elderly OR "older adults")

AND

TS=(frailty OR prefrailty OR "pre-frailty")

AND

TS=("diabetes mellitus" OR diabetes).

Participant or population Older adults aged 65 years or older with diabetes mellitus.

Intervention Not applicable (NA).

Comparator Not applicable (NA).

Study designs to be included The inclusion criteria for study selection were observational studies, including prospective and retrospective cohort studies, case-control studies, cross-sectional studies, and clinical trials; Assessment of frailty exclusively using the Fried frailty phenotype.

Eligibility criteria Older adults aged 65 years or older, of any nationality; publications in any language, with no restriction on publication date; diagnosis of diabetes mellitus in accordance with the World Health Organization (WHO) diagnostic criteria published in 2018; and frailty and pre-frailty assessed using the Fried frailty phenotype.

Information sources A comprehensive search strategy will be developed using the CoCoPop framework and will be implemented across PubMed (MEDLINE), Embase, Scopus, Web of Science, Biblioteca Virtual em Saúde (including LILACS), and SciELO. Controlled vocabulary (MeSH, Emtree, and DeCS) and free-text terms related to aging, frailty, pre-frailty, and diabetes mellitus will be combined using the Boolean operators AND and OR. No restrictions will be applied regarding language or publication date. The search strategy will be structured based on PubMed MeSH descriptors, in accordance with recommended practices to ensure the efficient and accurate retrieval of scientific evidence from biomedical databases.

Main outcome(s) Prevalence of frailty and pre-frailty (assessed using the Fried frailty phenotype).

Data management The review process will be managed using Rayyan. Rayyan's advanced deduplication feature will be used to automatically identify and remove duplicate references, thereby minimizing redundant screening of the same articles. This tool will enhance the efficiency and

accuracy of the review process by maintaining a clean and organized dataset, allowing reviewers to focus on the most relevant and unique studies.

Quality assessment / Risk of bias analysis For the methodological quality assessment of the included studies, the JBI Critical Appraisal Tool will be used.

Strategy of data synthesis Information including: Author-date, country of origin, target population, percentage of women, sample size, study design, minimum age, mean age and percentage of frailty and pre-frailty. Data will independent extracted by 2 authors.

Subgroup analysis We will conduct a subgroup based in diabetes mellitus to show if this increased risk for frailty in older hospitalized adults.

Sensitivity analysis To assess if the study results were stable, we will conduct a sensitivity analyses and will find if the pooled effects size did not have a material change.

Language restriction No restriction.

Country(ies) involved Brazil.

Other relevant information None

Keywords diabetes mellitus; Frailty; Aged; Frail Elderly, Systematic Review; Meta-analysis.

Contributions of each author

Author 1 - Clovis Cechinel - Conceptualization and study design; development of the methodology; data curation; formal analysis and interpretation of data; statistical analysis; drafting of the manuscript; critical revision of the manuscript for important intellectual content; and approval of the final version of the manuscript.

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Author 2 - Maria Helena Lenardt - Conceptualization and study design; development of the methodology; data curation; formal analysis and interpretation of data; statistical analysis; drafting of the manuscript; critical revision of the manuscript for important intellectual content; and approval of the final version of the manuscript.

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Author 3 - Rodrigues João Alberto Martins - Conceptualization and study design; development of the methodology; data curation; formal analysis and interpretation of data; statistical analysis; drafting of the manuscript; critical revision of the manuscript for important intellectual content; and approval of the final version of the manuscript.

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Author 4 - Debora Christina de Alcântara Lopes - Conceptualization and study design; development of the methodology; data curation; formal analysis and interpretation of data; statistical analysis; drafting of the manuscript; critical revision of the manuscript for important intellectual content; and approval of the final version of the manuscript.

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