



Supplemental Materials for

Prevalence and Risk of Heart Failure Among Older Adults Experiencing Homelessness: A Systematic Review and Meta-Analysis

Peter M. Hoang, Josephine Ding, Laith Almasri, Jeswende Seedu, Riyad Asgarali,
Yu Qing Huang, Charmaine De Castro, Paula Rochon, Maurita Harris,
and Kristina M. Kokorelias

<https://doi.org/10.5770/cgj.29.938>

Corresponding Author: Peter M. Hoang, MD, University of Toronto, 600 University Avenue, Toronto, ON
M5G 1X5

E-mail: peter.hoang@medportal.ca

Listing of Supplemental Material(s):

- **Table S1:** Study, homelessness, and heart failure characteristics
- **Table S2:** Participant characteristics
- **Table S3:** Extracted values for calculating prevalence, risk, and incidence
- **Table S4:** Publication bias assessment using Egger's test and Thompson–Sharp test
- **Table S5:** Assessment of GRADE
- **Figure S1:** Search strategy
- **Figure S2:** Funnel plots for the prevalence of heart failure and odds of heart failure
- **Figure S3:** (A) Risk-of-bias summary for the prevalence of heart failure. (B) Risk-of-bias traffic light plot for the prevalence of heart failure. (C) Risk-of-bias summary for the risk of heart failure and risk of mortality. (D) Risk-of-bias traffic light plot for the risk of heart failure and risk of mortality
- **Appendix S1:** PRISMA checklist
- **Appendix S2:** Moose checklist

Disclaimer: Supplemental material files are published by the CGJ as supplied by the Author(s). They are not peer reviewed, checked for accuracy, copyedited, typeset, or proofread. The responsibility for scientific accuracy remains with the Author(s).

Supplementary Table S1: Study, homelessness, and heart failure characteristics

Study author, year, and country	Study design, total initial sample size	Percentage female, mean age and SD (homeless); mean age and SD (housed)	Measure of homelessness	Measure of heart failure
Webb, 2025	1003270; Observational: Cohort study	19.5; NR (NR); NR(NR)	Patients were defined as having housing insecurity by using Clinical Classification Software (CCS) and ICD-10-CM codes	ICD-10
Fancher, 2025	2053; Observational: Cohort study	33.9; 50.5 (17.4); N/A(N/A)	HOME (Hawaii Houseless Outreach and Medical Education (HOME) Project) clinic, which operates clinics and one shelter	A diagnosis of CHF was given to patients who presented with signs and symptoms highly suggestive of congestive heart failure or who had undergone outside formal echocardiography showing either systolic or diastolic cardiac dysfunction.
Weze, 2023	7702714; Observational: Cohort study	39; 65 (16); 73.2(14.3)	NR	NR
Gula, 2022	70861; Observational: Cohort study	2.40000000000001; 62.4 (8.8); 73.7(11)	ICD-9/10	Inpatient admission for heart failure
	;	; (); ()		
Brown, 2022	450; Observational: Cohort study	24; NR (NR); N/A(N/A)	Recruited from settings of individuals who experience homelessness	Self-reported

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Tannis, 2022	15014; Observational: Cross-sectional	10.7; 53.7 (13.83); 62.2(18.34)	1) individuals who received primary care in the dedicated homeless patient aligned care team (HPACT) and 2) individuals who received 591 services while being assigned to a traditional PACT team but had an associated ICD- 10 code for homelessness or housing insecurity.	ICD-10
Averbuch, 2022	4287478; Observational: Cohort study	NR; NR (NR); N/A(NR)	ICD-10	ICD-10
Wadhera, 2020	1852790; Observational: Cohort study	46; 65.1 (14.8); 72.1(14.6)	ICD-9	ICD-9
Kilic, 2015	39; Observational: Cross-sectional	10.3; NR (NR); N/A(N/A)	Patients who did not have a proper living place as shelter (absolute homeless) and those who were staying in cheap hostels offering shelter only at night (relatively homeless) were considered as homeless.	Chart review
King, 2025	11103; Observational: Cohort study	16.9; 51.3 (NR); 47.1(NR)	(a) no known permanent address and (b) documentation of current residence at the time of death in any unsheltered location(s), temporary structure(s) not meant for human habitation, emergency shelter, or a hotel or motel.	Cause of death
Sokoloff, 2024	1357973; Observational: Cohort study	4.94; 62.2 (9.39); 72.01(10.41)	Veterans were identified as experiencing HUH if they met any of the following criteria: (1) self-	ICD-10

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

			identified as not having stable housing in response to the Homelessness Screening Clinical Reminder (HSCR), a screener question asked as part of routine VA outpatient care; (2) inpatient or outpatient diagnosis code identifying HUH during the study period; (3) clinic stop code corresponding to engagement with a service aimed at Veterans experiencing HUH; or (4) were listed in the VA Homeless Registry (a data set containing information on Veterans receiving services for HUH) during the study period.	
Shah, 2024	13838612; Observational: Cross-sectional	25.1; 57.1 (11); 66.4(14.1)	Homelessness was defined as “lacking permanent or reliable shelter... due to poverty, lack of affordable housing, mental illness, substance abuse, juvenile alienation, or other factor” or “inadequate housing, not otherwise specified.” ¹³ Of note, this variable does not distinguish PEH by length of time unhoused	ICD-10
Ergui, 2024	1202438; Observational: Cohort study	20.4; 53.82 (11.87); 66.74(14.46)	ICD-9/10	ICD-9/10

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Zordan, 2023	6290; Observational: Cohort study	21.1; NR (NR); NR(NR)	Individuals experiencing primary, secondary or tertiary homelessness were classified as 'homeless'.	ICD
Sharan, 2023	10438; Observational: Cohort study	32.3; 55.2 (13.58); 55.57(13.68)	ICD	ICD
Jain, 2022	14973; Observational: Cross-sectional	46.6; NR (NR); N/A(N/A)	NR	NR
Cha, 2021	199; Observational: Cross-sectional	16.5; NR (NR); N/A(N/A)	Identified in medical record	Chart abstraction
Minhas, 2021	3522459; Observational: Cohort study	18.02; 55.9 (0.55); 72.66(0.05)	NR	ICD
Chiu, 2019	198; Observational: Cohort study	29; 51 (NR); 57(NR)	Identified in medical record	Chart abstraction
Gelberg, 1990	521; Observational: Cross-sectional	NR; 57 (NR); N/A(N/A)	Spent the previous night in an emergency shelter; the outdoors; any space not designated for shelter; in a cheap hotel or motel, or in the home of relatives or friends and was uncertain whether they could live there for the next 60 nights; and did not have a permanent house to which they could go.	Self-reported
Miyawaki, 2021	167105; Observational: Cross-sectional	45.6; 64.5 (14.5); 69.6(14.5)	Hospital discharge indicator	ICD

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Jutkowitz, 2013	383478; Observational: Cohort study	4.78; 63.7 (15.16); 78.67(10.8)	ICD	ICD
Smaha 2024	282; Observational: Case control	14; 56.3 (10.31); 56.63(10.45)	Chart review	Chart abstraction
Dobbins, 2024	450; Observational: Cohort study	23.8; 58.5 (5.2); N/A(N/A)	Sampled from shelter, low-cost meal programs, recycling centre, and places where homeless people stayed	Self-reported
Raven, 2017	350; Observational: Cohort study	22.9; NR (NR); N/A(N/A)	Sampled from shelter, low-cost meal programs, recycling centre, and places where homeless people stayed	Self-reported
Henwood, 2017	421; Observational: Cohort study	27.8; 54.4 (7.5); N/A(N/A)	Currently homeless	Self-reported
Tong, 2018	350; Observational: Cohort study	22.9; NR (NR); N/A(N/A)	Sampled from shelter, low-cost meal programs, recycling centre, and places where homeless people stayed	Self-reported
Spinelli, 2017	350; Observational: Cohort study	22.9; NR (NR); N/A(N/A)	Sampled from shelter, low-cost meal programs, recycling centre, and places where homeless people stayed	Self-reported
Brown, 2011	247; Observational: Cross-sectional	19.8; 56 (4.8); N/A(N/A)	National Survey of Homeless Assistance Providers and Clients criteria	Self-reported
Roncarati, 2024	88388; Observational: Cohort study	5; 63.6 (10.9); 63.4(10.7)	Veterans with ICD-10 codes for homelessness or housing instability	ICD

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Booth, 2024	2761475; Observational: Cross-sectional	38.8; 57.67 (10.38); 63.67(13.33)	Individuals were identified if a health-care record included an International Classification of Diseases, 10th Revision diagnosis code of Z59.0 (homelessness) or Z59.1 (inadequate housing), where residence type was documented as “homeless” or “shelter”, or the patient was admitted from or discharged to “homeless (with or without shelter)”. The Canadian Coding Standards defines homelessness as “living on the streets or in places not intended for human habitation (eg, sidewalks, parks, cars); staying in overnight shelters; and staying in temporary accommodations (eg, motels, rooming houses, with friends/family, couch surfing, temporary housing for immigrants and refugees during settlement)”.	ICD
Abbs, 2020	350; Observational: Cohort study	22.9; NR (NR); N/A(N/A)	Sampled from shelter, low-cost meal programs, recycling centre, and places where homeless people stayed	Self-reported
Garcia, 2023	244; Observational: Cohort study	28.7; NR (NR); N/A(N/A)	Sampled from shelter, low-cost meal programs, recycling centre, and places where homeless people stayed	Self-reported

ICD: International Classification of Diseases

Supplementary Table S2: Participant characteristics

Study author, year,	Psychiatric comorbidities (%)	Medical comorbidities (%)	Race/Ethnicity (%); Gender (%)	Income level; Source of income (%); Education level	Military History (%); Incarceration history (%)	Social capital; Frailty
Webb, 2025	SUD: 70.2 Serious mental illness/psychosis: 8.92 AUD: 15.2 Tobacco-use disorder: 18.3	CAD: 45.1 AFIB: 27.7 MI: 10.1 Dyslipidemia: 35.3 PAD: 3.5 Stroke/TIA: 0.80 Diabetes: 34.9 Obesity: 24.6 CKD: 33.6 Anemia: 20.8 COPD/asthma: 6.44 Moderate-severe malnutrition: 1.64	White: 45.8 Black: 35 Hispanic: 11.1 Asian or Pacific Island: 2.29 Native: 0.77 Other: 3.44; NR	Quartile 1: 43.8 Quartile 2: 25.8 Quartile 3: 18.5 Quartile 4: 11.9; NR; NR	NR; NR	NR; NR
Fancher, 2025	NR	Diabetes: 11.7 Obesity: 11.5 Dyslipidemia: 5.8 Hypertension 20.8 Arrhythmia: 10.3 CAD: 1.1	White: 36.5 Other Pacific Islander: 24.1 Asian: 9.5 Native Hawaiian: 8.3 Mixed Native Hawaiian: 7.4 African	NR; NR; NR	NR; NR	NR; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		MI: 2.2 Stroke: 2.2	American: 5.9 Hispanic: 3.2; NR			
Weze, 2023	SUD: 16.62 Depression: 13.81 Psychosis: 7.16 AUD: 17.16	Hypertension: 70.27 Valvular disease: 13.54 Arrhythmia: 39.45 Diabetes: 29.46 Obesity: 12.05 COPD: 36.77 Cancer: 2.26 Renal: 21.32 AIDS: 0.70 PAD: 4.56 MI: 15.38 Stroke/TIA: 5.48	White: 60.81 Black: 27.40 Hispanic: 7.60 Asian: 1.60 Native: 1; NR	Quartile 1: 41 Quartile 2: 24 Quartile 3: 20.6 Quartile 4: 14.4; NR; NR	NR; NR	NR; NR
Gula, 2022	NR	Diabetes: 48.6 COPD: 15.4 Lymphoma: 1.6 Metastatic disease: 2.0 Dementia: 4.8 MI: 12.1	White: 45.3 Black: 46.7 Hispanic: 7.0; NR	NR; NR; NR	Yes; NR	Married: 10.6; NR
			;	;;	;	;
Brown, 2022	Regular drug use: NR Psychiatric hospitalization: 34 Depression: 67	Hypertension: 58 Cardiac disease: 4 Stroke/TIA: 12	White: 11 Black: 80 Latino: 5 Multiracial/other: 5; NR	NR; NR; More than high school: 54 High school: 21	NR; Yes	Married: 12; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		Diabetes: 16 COPD: 27 Liver disease: 23 Renal: 5 HIV: 5 Cancer: 7		Less than high school: 27		
Tannis, 2022	AUD: 20.5	NR	White: 23.3 Black: 64.1 Other: 1.7; NR	NR; NR; NR	Yes; NR	NR; NR
Averbuch, 2022	NR	NR	NR; NR	NR; NR; NR	NR; NR	NR; NR
Wadhera, 2020	Psychosis: 4.4 Depression: 5.0 SUD: 8.4	Anemia: 19.0 COPD: 23.5 Diabetes: 47.5 Hypertension 75.9 Hypothyroidism: 7.2 Lymphoma: 0.5 Metastatic cancer: 0.7 PAD: 5.7 Renal: 26.7 Solid tumor: 1.5 RA: 1.3 PUD: 0.1 Valvular disease: 1.3 MI: 21.5 Stroke/TIA: 23.6	White: 17.3 Black: 38.6 Hispanic: 20.3 Other: 23.9; NR	NR; NR; NR	NR; NR	NR; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Kilic, 2015	AUD: 1.7	Epilepsy: 9.67 Malignancy: 16.12 CAD: 19.35 COPD: 19.35 Renal: 12.90 AFIB: 12.90 Diabetes: 12.9	NR; NR	NR; NR; NR	NR; NR	NR; NR
King, 2025	NR	NR	NR; NR	NR; NR; NR	NR; NR	NR; NR
Sokoloff, 2024	Depression: 78.7 SUD: 51.2 AUD: 12.9 Psychosis: 23.6	HIV: 2.0 Arrhythmia: 49.0 COPD: 59.3 Diabetes: 44.5 Hypertension: 90.7 Liver: 31.4 Lymphoma: 2.0 Metastatic cancer: 6.2 Obesity: 38.9 PAD: 35.8	White: 56.03 Black: 36.33 Hispanic: 3.29 Hispanic: 4.35; NR	14488.42 (21139.75); NR; NR	Yes; NR	NR; NR
Shah, 2024	SUD: 70.2	MI: 0.1 PAD: 2.0 Stroke/TIA: 4.2 Dementia: 0.3 COPD: 0.1 CTD: 1.2 Diabetes: 18.1 HIV: 5.3	White: 56.9 Black: 24.7 Asian: 1.6 Hispanic: 10.1 Native: 1.2 Other: 3.1; NR	NR; NR; NR	NR; NR	NR; NR
Ergui, 2024	AUD: 25.6	CAD: 39.1 Diabetes: 24.3	White: 45.2; NR	NR; NR; NR	NR; NR	NR; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		Hypertension: 61.2 MI: 11.4 Stroke: 9.1 COPD: 27.8 Asthma: 6.0 PAD: 5.0 Obesity: 8.0 Dyslipidemia: 24.9 Malignancy: 2.7 Liver disease: 15.1				
Zordan, 2023	NR	NR	Aboriginal & Torres Strait Islander: 7.1% Other race/ethnicity categories: NR; NR	NR; NR; NR	NR; NR	NR; NR
Sharan, 2023	Any mental illness: 74.7	MI: 11.6 Stroke/TIA: 8.2 Diabetes: 100	NR; NR	NR; NR; NR	NR; NR	NR; NR
Jain, 2022	AUD: 19.6 Depression: 16.3 SUD: 18.4	Hypertension: 53.6 Dyslipidemia: 21.6 Diabetes: 59.8 Obesity: 6.9 PAD: 4.0 Renal: 8.3	White: 73.7 Black: 15.4 Hispanic: 7.1 Asian: 1.0 Other: 2.0 Native: 0.7; NR	0-25 quartile: 35.5% 26-50 quartile: 23.4% 51-75 quartile: 21.5% (not very legible) 76-100	NR; NR	NR; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		HIV: 1.7 RA: 1.9 COPD: 26.0 Liver: 10.2 Lymphoma: 0.6 Metastatic cancer: 3.5 Solid tumor: 3.0 Valvular: 2.3		quartile: 19.6%; NR; NR		
Cha, 2021	SUD: 3.1 Mental disorder: 8.4 AUD: 44.1	Hypertension: 43.9 COPD: 9.5 Asthma: 16.7 Diabetes: 15.9 Cardiomyopathy : 4.6 CAD: 6.5	White: 36.9 Black: 33.4 Hispanic: 23.8 Other: 4.3; NR	NR; NR; NR	NR; NR	NR; NR
Minhas, 2021	SUD: 46.28 AUD: 20.38	COPD: 44.84 AFIB: 22.62 Diabetes: 35.27 Hypertension: 83.82 Obesity: 19.75 PAD: 13.50 Dyslipidemia: 31.73 Valvular: 20.45	NR; NR	NR; NR; NR	NR; NR	NR; NR
Chiu, 2019	NR	Liver disease: 16	White: 57; NR	NR; NR; NR	NR; NR	NR; NR
Gelberg, 1990	NR	MI: 12 COPD: 25 Liver failure: 13	White: 85 Black: 8 Hispanic: 3	NR; Salary: 17 Foodstamps: 15	Yes; NR	Married: 7; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		Cancer: 15 Hypertension: 37 Stroke/TIA: 5 Asthma: 12 Seizures: 7 Tb: 6 Renal: 9 Diabetes: 8	Native/Asian: 3; NR	General relief: 8 Social security: 226 Supplemental security: 18 Money from friends or relatives: 15 Panhandling: 24 Charity: 10 Selling blood: 7 Selling cans: 7; NR		
Miyawaki, 2021	SUD: 8.3 AUD: 8.0	Valvular: 5.8 Hypertension: 80.6 PAD: 4.8 Diabetes: 44.5 Renal: 17.5	White: 19.1 Black: 31.8 Hispanic: 24.5 Other: 24.7; NR	NR; NR; NR	NR; NR	NR; NR
Jutkowitz, 2013	AUD: 14.72 SUD: 6.12 Depression: 35.72 PTSD: 19.31 Psychosis: 30.56	Rheumatic: 1.44 Renal: 7.62 Liver: 6.03 Diabetes: 26.09 Hypertension: 55.47 Lung: 17.81 Stroke: 14.69 Valvular: 3.66	White: 68.59 Black: 22.72 Other: 8.69; NR	NR; NR; NR	Yes; NR	NR; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Smaha 2024	AUD: 84 SUD: 11	CAD: 16 Hypertension: 25 Diabetes: 9 AFIB: 13 Renal: 18 COPD: 11 Malignancy: 10 Liver: 41 HIV: 1	NR; NR	NR; NR; NR	NR; NR	NR; NR
Dobbins, 2024	SUD: 40.2	Liver: 29.1 COPD/asthma: 36.2 Diabetes: 25.6 Stroke: 12.4 MI: 10.2 HIV: 5.8 Cancer: 10.7	Black: 80 White: 10.7 Latino: 4.7; NR	NR; NR; NR	NR; NR	NR; NR
Raven, 2017	PTSD: 32.6 Depressive symptoms: 53.3 AUD: 24.5 SUD: 50.6	Hypertension: 56 Diabetes: 14 COPD/asthma: 26.3 Cancer: 6.0 HIV: 5.5 MI: 9.1 Stroke: 11.2 Cognitive: 25.8	Black: 79.7; NR	Monthly income 0 to 150: 25.6 151 to 700: 24.4 701 to 1150: 40.1 Over 1150: 9.9; NR; High school or GED 74.3	NR; Yes	Support social scale: 66.5; NR
Henwood, 2017	Schizophrenia: 27.8	Hypertension: 51.8	Black: 56.0 White: 23.8	NR; NR; High school: 77.0	Yes (30.4); NR	NR; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

	Bipolar: 30.6 PTSD: 28.7 Anxiety: 45.8 Depression: 53.7	Diabetes: 24 COPD/asthma: 29.0 Cancer: 11.2	Hispanic: 8.8 Multiracial: 4.8 Other: 6.7; Transwoman or transfemale: 0.7			
Tong, 2018	Depressive symptoms: 53.3	Hypertension: 55.7 MI: 9.1 Dyslipidemia: 28.9 Diabetes: 14.0	Black: 79.7 White: 10.9 Hispanic: 4.6; NR	Annual income >15000: 7.4; NR; Less than high school: 25.7	Yes (21.7); ≈	NR; NR
Spinelli, 2017	Depressive symptoms: 38.3 PTSD symptoms: 32.6	Hypertension: 55.7 MI: 9.1 Dyslipidemia: 28.9 Diabetes: 14.0 Cancer: 6.0 Stroke: 11.2 COPD/asthma: 19.1 Liver: 2.6 HIV: 5.5	Black: 79.7 White: 10.9 Hispanic: 4.6; NR	NR; NR; High school or GED: 74.0	Yes (21.7); Married/partnered : 4.9	NR; NR
Brown, 2011	AUD: 18.7 Depression: 59.6	Stroke: 6.9 Cancer: 5.8 Diabetes: 16.4 CAD: 13.1 Hypertension: 5 COPD/asthma:	Black: 40.1 White: 39.7 Latino: 10.5; NR	NR; NR; Less than high school: 26.1	NR; NR	NR; Yes

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		32.2 Arthritis: 44.9				
Roncarati, 2024	AUD: 13 SUD: 3 Depression: 35 PTSD: 15 Psychosis: 25	COPD/asthma: 24 Hypertension: 67 Diabetes: 31 Liver: 7 Renal: 10 Rheumatic: 2	White: 67 Black: 23 Other: 10; NR	NR; NR; NR	Yes (11); Not married: 69	NR; NR
Booth, 2024	Schizophrenia: 14.2 Mood or anxiety disorders: 39.9 SUD: 29.3 Deliberate self-harm: 7.8 Other mental health conditions: 20.3	Head trauma: 22.4 Stroke/TIA: 4.9 Diabetes: 27.4 Hypertension: 45.1 CAD: 7.8 COPD: 33.2 Parkinsonism 1.8 Epilepsy 10.6 Multiple sclerosis 1.5 HIV 1.9	NR; NR	NR; NR; NR	NR; NR	NR; NR
Abbs, 2020	Depressive symptoms: 38.3	Arthritis: 44.6 MI: 9.1 Diabetes: 14.0 Stroke: 11.2 Lung: 26.9	Black: 79.7 White: 10.9 Hispanic: 4.6; NR	NR; NR; Less than high school or GED: 25.7	NR; NR	Social support 0 confidants: 32.5 1-5 confidants: 58.9 6+ confidants: 10.1; NR
Garcia, 2023	Anxiety: 33.2 Depressive	Hypertension: 39.3	Black: 82.8; NR	NR; NR; NR	NR; NR	Lonely: 34.0; NR

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

	symptoms: 19.7 PTSD: 19	Lung: 7 CAD: 7 Arthritis: 61.1 Liver: 28.3 Urinary incontinence: 42.2				
--	----------------------------	---	--	--	--	--

AFIB: atrial fibrillation; AUD: alcohol use disorder; CAD: coronary artery disease; COPD: chronic obstructive pulmonary disease; HIV: human immunodeficiency virus; MI: myocardial infarction; PTSD: post-traumatic stress disorder; SUD: substance use disorder; TIA: transient ischemic attack

Supplementary Table S3: Extracted values for calculating prevalence, risk, and incidence

Study author, year,	Homeless with CHF	Total homeless	Housed with CHF	Housed total	Adjusted odds ratio	Homeless mortality	Housed mortality
Webb, 2025		16150		9871230			
Fancher, 2025	59	2057					
Weze, 2023		21980				343	399209
Gula, 2022		1967				70	3864
						485	17394
Brown, 2022	36	450					
Tannis, 2022	52	1391	572	13051	1.32		
Averbuch, 2022		26195				385	218195
Wadhera, 2020	13411	24890	873787	954113		215	13981
Kilic, 2015	6	31					
King, 2025		417		10686		10	183
Sokoloff, 2024	17515	56093	243340	1058540			

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Shah, 2024	5185	45150	1938280	11855182			
Ergui, 2024	3335	4510	850221	347707		1209	422651
Zordan, 2023		1050		4722			
Sharan, 2023	699	5219	838	4381			
Jain, 2022	1138	14973					
Cha, 2021	12	199					
Minhas, 2021		285555		3493904			
Chiu, 2019	5	68	24	106			
Gelberg, 1990	5	61					
Miyawaki, 2021	436	2123	40681	124301			
Jutkowitz, 2013	244	3200	34406	345872			
Smaha 2024	27	141	50	91			
Dobbins, 2024	48	450					
Raven, 2017	25	350					
Henwood, 2017	33	421					
Tong, 2018	25	350					
Spinelli, 2017	25	350					
Brown, 2011	11	247					
Roncarati, 2024	4384	44194					
Booth, 2024	1002	12863	62687	2210381			
Abbs, 2020	25	350					
Garcia, 2023	38	244					

Blank cells delineate where data were not extractable.

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Supplementary Table S4: Publication bias assessment using Egger's test and Thompson-Sharp test for the prevalence of heart failure

Test	Estimate (Standard error)	t-value (degrees of freedom)	p-value
Egger's test	-0.69 (0.28)	-2.50	0.023
Thompson test	-2.71 (1.61)	-1.68	0.11

Supplementary Table S5: Assessment of GRADE

Outcome	1. Risk of bias	2. Imprecision	3. Inconsistency	4. Indirectness	5. Publication bias	Overall
Prevalence	Not Serious	Serious	Serious	Serious	Suspected	Very low
Rationale	The overall risk of bias is low, and does not reduce the certainty of the effect. Subgroups on risk of bias did not significantly change the overall estimate	There is a wide confidence interval, and the clinical implication does change between 1 and 56%.	I ² alone will be inflated due to large sample sizes. Subgroup analyses do not fully explain heterogeneity.	There are groups that are highly heterogeneous.	Two tests show possibility of publication bias	
Risk of heart failure	Serious	Not serious	Serious	Serious	Suspected	Very low
Rationale	Overall risk of bias was high	Narrow confidence interval, the CI crosses the	Large I ² value	There are groups that are highly heterogeneous.	Risk of publication bias for small studies	

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

		decision threshold				
Risk of heart failure mortality	Serious	Serious	Serious	Serious	Suspected	Very low
Rationale	Overall risk of bias was high	Small number of studies	High I ² , but direction of the effect between studies is consistent, but the range can change interpretation	There are groups that are highly heterogeneous.	Risk of publication bias for small studies	

All databases searched and results exported on April 03, 2025.

Database	Exports
OVID Medline ® All	396
OVID Embase+Embase Classic	956
OVID Cochrane Database of Systematic Reviews	30
EBSCOhost CINAHL Complete	194
Clarivate Web of Science	845
Total Exports	2421
Total after deduplication in Covidence	
Duplicates	

OVID Medline Final Search:

Ovid MEDLINE(R) ALL <1946 to April 02, 2025>

- 1 Heart Failure/ 155543
- 2 Heart Failure, Diastolic/ 882
- 3 Heart Failure, Systolic/ 1604
- 4 Cardio-Renal Syndrome/ 1132
- 5 Dyspnea, Paroxysmal/ 356

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

- 6 Edema, Cardiac/ 832
- 7 ((Heart or Cardiac or Myocardial or Congestive) adj2 (failure* or failed or infarction*)).tw,kf,kw. 458747
- 8 (Heart adj1 (decompensation or decompensate* or lack of blood or unable to pump or stops pump*)).tw,kf,kw. 5324
- 9 cardiovascular diseases/ or cardiovascular abnormalities/ or cardiovascular infections/ or heart diseases/ or heart neoplasms/ or heart rupture/ or heart valve diseases/ or myocardial ischemia/ or pericarditis/ or ventricular dysfunction/ 364713
- 10 ((Cardiovascular adj3 disease*) or (Heart adj3 disease*) or (Cardiac adj3 disease*) or (Cardiovascular adj3 abnormalit*) or (Heart adj3 abnormalit*) or (Cardiac adj3 abnormalit*) or (Cardiovascular adj3 infect*) or (Heart adj3 infect*) or (Cardiac adj3 infect*) or (Heart adj3 neoplasm*) or (myocardial adj3 ischemia) or (ventricular adj3 disfunc*)).tw,kf,kw. 566246
- 11 ((atrial adj1 fibrillation) or (high* adj1 blood pressure) or (low* adj1 blood pressure) or (abnormal adj1 blood pressure) or (cerebral adj1 vascul*)).tw,kf,kw. 156968
- 12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 1252568
- 13 Ill-Housed Persons/ 10611
- 14 Housing Instability/ 114
- 15 Emergency Shelter/ 335
- 16 (Ill-housed or Illhoused or Unhoused or Underhoused or Homeless* or Shelterless* or roofless or unshelter* or runaway).tw,kf,kw. 17703
- 17 ((Unsheltered or Street or Precarious* Housed or Precarious* Housing or Precarious* living) adj2 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human?)).tw,kf,kw. 332
- 18 ((Precarious adj1 Living adj1 Situation?) or (Without adj1 (home or housing))).tw,kf,kw. 1746
- 19 ((Housing adj1 Precari*) or (House adj1 Precari*) or (Transition* adj Housing) or (Homeless adj1 Shelter*)).tw,kf,kw. 1134
- 20 ((Housing adj1 Instability) or (Hous* adj1 Unstabl*) or (Housing adj1 Eviction*) or (Housing adj1 Insecurit*) or (Housing adj1 Insecure) or (Unstabl* adj1 housed) or (Vulnerabl* adj1 housed) or housing first or (supportive adj1 hous*) or (transitional adj1 shelter*) or (marginal* adj1 housed) or skid row).tw,kf,kw. 3683
- 21 ((Street adj1 involved) or (Seeking adj1 shelter) or (No adj1 fixed adj1 address) or (Emergency adj3 shelter*) or (Living adj1 on adj2 street)).tw,kf,kw. 878

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

22	13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21	24138
23	12 and 22	396

OVID Embase:

Embase Classic+Embase <1947 to 2025 April 02>

1	heart failure/	367202
2	diastolic heart failure/	3163
3	systolic heart failure/	6674
4	cardiorenal syndrome/	3505
5	paroxysmal dyspnea/	1323
6	heart edema/	2615
7	((Heart or Cardiac or Myocardial or Congestive) adj2 (failure* or failed or infarction*)).tw,kf,kw.	753195
8	(Heart adj1 (decompensation or decompensate* or lack of blood or unable to pump or stops pump*)).tw,kf,kw.	11136
9	cardiovascular disease/	411763
10	cardiovascular malformation/	8057
11	cardiovascular infection/	1577
12	heart disease/	165105

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

- 13 heart tumor/ 14619
- 14 heart rupture/ 4873
- 15 valvular heart disease/ 36748
- 16 heart muscle ischemia/ 108248
- 17 pericarditis/ 26721
- 18 heart ventricle function/ 24224
- 19 ((Cardiovascular adj3 disease*) or (Heart adj3 disease*) or (Cardiac adj3 disease*) or (Cardiovascular adj3 abnormalit*) or (Heart adj3 abnormalit*) or (Cardiac adj3 abnormalit*) or (Cardiovascular adj3 infect*) or (Heart adj3 infect*) or (Cardiac adj3 infect*) or (Heart adj3 neoplasm*) or (myocardial adj3 ischemia) or (ventricular adj3 disfunc*)).tw,kf,kw. 840722
- 20 ((atrial adj1 fibrillation) or (high* adj1 blood pressure) or (low* adj1 blood pressure) or (abnormal adj1 blood pressure) or (cerebral adj1 vascul*)).tw,kf,kw. 267522
- 21 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 2047437
- 22 homeless person/ 3650
- 23 housing instability/ 1089
- 24 emergency shelter/ 724
- 25 (Ill-housed or Illhoused or Unhoused or Underhoused or Homeless* or Shelterless* or roofless or unshelter* or runaway).tw,kf,kw. 21670
- 26 ((Unsheltered or Street or Precarious* Housed or Precarious* Housing or Precarious* living) adj2 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human?)).tw,kf,kw. 406
- 27 ((Precarious adj1 Living adj1 Situation?) or (Without adj1 (home or housing))).tw,kf,kw. 2980
- 28 ((Housing adj1 Precari*) or (House adj1 Precari*) or (Transition* adj Housing) or (Homeless adj1 Shelter*)).tw,kf,kw. 1442
- 29 ((Housing adj1 Instability) or (Hous* adj1 Unstabl*) or (Housing adj1 Eviction*) or (Housing adj1 Insecurit*) or (Housing adj1 Insecure) or (Unstabl* adj1 housed) or (Vulnerabl* adj1 housed) or housing first or (supportive adj1 hous*) or (transitional adj1 shelter*) or (marginal* adj1 housed) or skid row).tw,kf,kw. 4786

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

- 30 ((Street adj1 involved) or (Seeking adj1 shelter) or (No adj1 fixed adj1 address) or (Emergency adj3 shelter*) or (Living adj1 on adj2 street)).tw,kf,kw. 1010
- 31 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 29362
- 32 21 and 31 956

OVID Cochrane Database of Systematic Reviews:

EBM Reviews - Cochrane Database of Systematic Reviews <2005 to April 2, 2025>

- 1 ((Heart or Cardiac or Myocardial or Congestive) adj2 (failure* or failed or infarction*)).tw,kw. 1610
- 2 (Heart adj1 (decompensation or decompensate* or lack of blood or unable to pump or stops pump*)).tw,kw. 26
- 3 ((Cardiovascular adj3 disease*) or (Heart adj3 disease*) or (Cardiac adj3 disease*) or (Cardiovascular adj3 abnormalit*) or (Heart adj3 abnormalit*) or (Cardiac adj3 abnormalit*) or (Cardiovascular adj3 infect*) or (Heart adj3 infect*) or (Cardiac adj3 infect*) or (Heart adj3 neoplasm*) or (myocardial adj3 ischemia) or (ventricular adj3 disfunc*)).tw,kw. 2089
- 4 ((atrial adj1 fibrillation) or (high* adj1 blood pressure) or (low* adj1 blood pressure) or (abnormal adj1 blood pressure) or (cerebral adj1 vascul*)).tw,kw. 985
- 5 1 or 2 or 3 or 4 3114
- 6 (Ill-housed or Illhoused or Unhoused or Underhoused or Homeless* or Shelterless* or roofless or unshelter* or runaway).tw,kw. 89
- 7 ((Unsheltered or Street or Precarious* Housed or Precarious* Housing or Precarious* living) adj2 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human?)).tw,kw. 5
- 8 ((Precarious adj1 Living adj1 Situation?) or (Without adj1 (home or housing))).tw,kw. 36
- 9 ((Housing adj1 Precari*) or (House adj1 Precari*) or (Transition* adj Housing) or (Homeless adj1 Shelter*)).tw,kw. 12

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

10 ((Housing adj1 Instability) or (Hous* adj1 Unstabl*) or (Housing adj1 Eviction*) or (Housing adj1 Insecurit*) or (Housing adj1 Insecure) or (Unstabl* adj1 housed) or (Vulnerabl* adj1 housed) or housing first or (supportive adj1 hous*) or (transitional adj1 shelter*) or (marginal* adj1 housed) or skid row).tw,kw. 11

11 ((Street adj1 involved) or (Seeking adj1 shelter) or (No adj1 fixed adj1 address) or (Emergency adj3 shelter*) or (Living adj1 on adj2 street)).tw,kw. 11

12 6 or 7 or 8 or 9 or 10 or 11 133

13 5 and 12 30

EBSCOhost CINAHL:

Thu, April 3, 2025 4:35:18 PM

#	Query	Limiters/Expanders	Last Run Via	Results
S27	S17 AND S26	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	194
S26	S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	16,178

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

S25	XB ((Street N0 involved) or (Seeking N0 shelter) or (No N0 fixed N0 address) or (Emergency N2 shelter*) or (Living N0 on N1 street))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	682
S24	XB ((Housing N0 Instability) or (Hous* N0 Unstabl*) or (Housing N0 Eviction*) or (Housing N0 Insecurit*) or (Housing N0 Insecure) or (Unstabl* N0 housed) or (Vulnerabl* N0 housed) or housing first or (supportive N0 hous*) or (transitional N0 shelter*) or (marginal* N0 housed) or skid row))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	2,423
S23	XB ((Housing N0 Precari*) or (House N0 Precari*) or (Transition* adj Housing) or (Homeless N0 Shelter*))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	636
S22	XB ((Precarious N0 Living N0 Situation#) or (Without N0 (home or housing)))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	859

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

S21	XB (((Unsheltered or Street or Precarious* Housed or Precarious* Housing or Precarious* living) N1 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human#)))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	210
S20	XB ((Ill-housed or Illhoused or Unhoused or Underhoused or Homeless* or Shelterless* or roofless or unshelter* or runaway))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	11,838
S19	(MH "Housing Instability")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	425
S18	(MH "Homeless Persons")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	6,942
S17	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases	337,521

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

			Search Screen - Advanced Search Database - CINAHL Complete	
S16	XB (((atrial N0 fibrillation) or (high* N0 blood pressure) or (low* N0 blood pressure) or (abnormal N0 blood pressure) or (cerebral N0 vascul*)))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	50,814
S15	XB (((Cardiovascular N2 disease*) or (Heart N2 disease*) or (Cardiac N2 disease*) or (Cardiovascular N2 abnormalit*) or (Heart N2 abnormalit*) or (Cardiac N2 abnormalit*) or (Cardiovascular N2 infect*) or (Heart N2 infect*) or (Cardiac N2 infect*) or (Heart N2 neoplasm*) or (myocardial N2 ischemia) or (ventricular N2 disfunc*)))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	128,522
S14	(MH "Ventricular Dysfunction")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	776
S13	(MH "Pericarditis")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search	1,838

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

			Database - CINAHL Complete	
S12 (MH "Myocardial Ischemia")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	10,831	
S11 (MH "Heart Valve Diseases")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	5,316	
S10 (MH "Heart Rupture")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	483	
S9 (MH "Heart Neoplasms")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	2,609	

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

S8	(MH "Heart Diseases")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	19,939
S7	(MH "Cardiovascular Abnormalities")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	1,261
S6	(MH "Cardiovascular Diseases")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	61,727
S5	XB ((Heart N0 (decompensation or decompensate* or lack of blood or unable to pump or stops pump*)))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	1,924
S4	XB (((Heart or Cardiac or Myocardial or Congestive) N1 (failure* or failed or infarction*)))	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases	118,821

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

			Search Screen - Advanced Search Database - CINAHL Complete	
S3	(MH "Dyspnea, Paroxysmal")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	65
S2	(MH "Cardio-Renal Syndrome")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	75
S1	(MH "Heart Failure")	Expanders - Apply equivalent subjects Search modes - Proximity	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Complete	51,142

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Clarivate's Web of Science:

Entitlements	#	Search Query	Database	Results	Date Run
- WOS.IC: 1993 to 2025 - WOS.CCR: 1985 to 2025 - WOS.SCI: 1900 to 2025 - WOS.AHCI: 1975 to 2025 - WOS.BHCI: 2005 to 2025 - WOS.BSCI: 2005 to 2025 - WOS.ESCI: 2005 to 2025 - WOS.ISTP: 1990 to 2025 - WOS.SSCI: 1900 to 2025 - WOS.ISSHP: 1990 to 2025	1	TS=((Heart or Cardiac or Myocardial or Congestive) Near/1 (failure* or failed or infarction*))	Web of Science Core Collection	683894	Thu Apr 03 2025 17:00:09 GMT-0400 (Eastern Daylight Time)

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

2	TS=((Heart Near/0 decompensation) or (Heart Near/0 decompensate*) or (Heart Near/0 "lack of blood") or (Heart Near/0 "unable to pump") or (Heart Near/0 stops pump*))	Web of Science Core Collection	7854	Thu Apr 03 2025 17:03:51 GMT-0400 (Eastern Daylight Time)
- WOS.IC: 1993 to 2025				
- WOS.CCR: 1985 to 2025				
- WOS.SCI: 1900 to 2025				
- WOS.AHCI: 1975 to 2025				
- WOS.BHCI: 2005 to 2025				
- WOS.BSCI: 2005 to 2025				
- WOS.ESCI: 2005 to 2025				
- WOS.ISTP: 1990 to 2025				
- WOS.SSCI: 1900 to 2025				
- WOS.ISSHP: 1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

3	TS=((Cardiovascular Near/2 disease*) or (Heart Near/2 disease*) or (Cardiac Near/2 disease*) or (Cardiovascular Near/2 abnormalit*) or (Heart Near/2 abnormalit*) or (Cardiac Near/2 abnormalit*) or (Cardiovascular Near/2 infect*) or (Heart Near/2 infect*) or (Cardiac Near/2 infect*) or (Heart Near/2 neoplasm*) or (myocardial Near/2 ischemia) or (ventricular Near/2 disfunc*))	Web of Science Core Collection	740081	Thu Apr 03 2025 17:04:15 GMT-0400 (Eastern Daylight Time)
- WOS.IC: 1993 to 2025				
- WOS.CCR: 1985 to 2025				
- WOS.SCI: 1900 to 2025				
- WOS.AHCI: 1975 to 2025				
- WOS.BHCI: 2005 to 2025				
- WOS.BSCI: 2005 to 2025				
- WOS.ESCI: 2005 to 2025				
- WOS.ISTP: 1990 to 2025				
- WOS.SSCI: 1900 to 2025				
- WOS.ISSHP: 1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

4	TS=((atrial Near/0 fibrillation) or (high* Near/0 blood pressure) or (low* Near/0 blood pressure) or (abnormal Near/0 blood pressure) or (cerebral Near/0 vascul*))	Web of Science Core Collection	197626	Thu Apr 03 2025 17:04:26 GMT-0400 (Eastern Daylight Time)
- WOS.IC: 1993 to 2025				
- WOS.CCR: 1985 to 2025				
- WOS.SCI: 1900 to 2025				
- WOS.AHCI: 1975 to 2025				
- WOS.BHCI: 2005 to 2025				
- WOS.BSCI: 2005 to 2025				
- WOS.ESCI: 2005 to 2025				
- WOS.ISTP: 1990 to 2025				
- WOS.SSCI: 1900 to 2025				
- WOS.ISSHP: 1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

5 #4 OR #3 OR #2 OR #1

Web of
Science Core
Collection

1404608

Thu Apr 03 2025
17:04:32 GMT-
0400 (Eastern
Daylight Time)

- WOS.IC: 1993
to 2025

- WOS.CCR:
1985 to 2025

- WOS.SCI:
1900 to 2025

- WOS.AHCI:
1975 to 2025

- WOS.BHCI:
2005 to 2025

- WOS.BSCI:
2005 to 2025

- WOS.ESCI:
2005 to 2025

- WOS.ISTP:
1990 to 2025

- WOS.SSCI:
1900 to 2025

- WOS.ISSHP:
1990 to 2025

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

6	TS=(Ill-housed or Illhoused or Unhoused or Underhoused or Homeless* or Shelterless* or roofless or unshelter* or runaway)	Web of Science Core Collection	47977	Thu Apr 03 2025 17:04:50 GMT-0400 (Eastern Daylight Time)
- WOS.IC: 1993 to 2025				
- WOS.CCR: 1985 to 2025				
- WOS.SCI: 1900 to 2025				
- WOS.AHCI: 1975 to 2025				
- WOS.BHCI: 2005 to 2025				
- WOS.BSCI: 2005 to 2025				
- WOS.ESCI: 2005 to 2025				
- WOS.ISTP: 1990 to 2025				
- WOS.SSCI: 1900 to 2025				
- WOS.ISSHP: 1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

7	TS=(Unsheltered Near/1 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human\$))	Web of Science Core Collection	102	Thu Apr 03 2025 17:06:35 GMT-0400 (Eastern Daylight Time)
- WOS.IC:				
to 1993				
to 2025				
- WOS.CCR:				
1985 to 2025				
- WOS.SCI:				
1900 to 2025				
- WOS.AHCI:				
1975 to 2025				
- WOS.BHCI:				
2005 to 2025				
- WOS.BSCI:				
2005 to 2025				
- WOS.ESCI:				
2005 to 2025				
- WOS.ISTP:				
1990 to 2025				
- WOS.SSCI:				
1900 to 2025				
- WOS.ISSHP:				
1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

8	TS=(Street Near/1 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human\$))	Web of Science Core Collection	1084	Thu Apr 03 2025 17:06:52 GMT-0400 (Eastern Daylight Time)
- WOS.IC:				
to 2025				
- WOS.CCR:				
1985 to 2025				
- WOS.SCI:				
1900 to 2025				
- WOS.AHCI:				
1975 to 2025				
- WOS.BHCI:				
2005 to 2025				
- WOS.BSCI:				
2005 to 2025				
- WOS.ESCI:				
2005 to 2025				
- WOS.ISTP:				
1990 to 2025				
- WOS.SSCI:				
1900 to 2025				
- WOS.ISSHP:				
1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

9	TS=(Precarious* Housed Near/1 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human\$))	Web of Science Core Collection	385	Thu Apr 03 2025 17:07:15 GMT-0400 (Eastern Daylight Time)
- WOS.IC:				
to 2025				
- WOS.CCR:				
1985 to 2025				
- WOS.SCI:				
1900 to 2025				
- WOS.AHCI:				
1975 to 2025				
- WOS.BHCI:				
2005 to 2025				
- WOS.BSCI:				
2005 to 2025				
- WOS.ESCI:				
2005 to 2025				
- WOS.ISTP:				
1990 to 2025				
- WOS.SSCI:				
1900 to 2025				
- WOS.ISSHP:				
1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

10	TS=(Precarious* Housing Near/1 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human\$))	Web of Science Core Collection	385	Thu Apr 03 2025 17:07:27 GMT-0400 (Eastern Daylight Time)
- WOS.IC:				
to 2025				
- WOS.CCR:				
1985 to 2025				
- WOS.SCI:				
1900 to 2025				
- WOS.AHCI:				
1975 to 2025				
- WOS.BHCI:				
2005 to 2025				
- WOS.BSCI:				
2005 to 2025				
- WOS.ESCI:				
2005 to 2025				
- WOS.ISTP:				
1990 to 2025				
- WOS.SSCI:				
1900 to 2025				
- WOS.ISSHP:				
1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

11	TS=(Precarious* living Near/1 (Person* or People* or Individual or Individuals or Man or Men or Woman or Women or Human\$))	Web of Science Core Collection	1493	Thu Apr 03 2025 17:07:36 GMT-0400 (Eastern Daylight Time)
- WOS.IC:				
to 2025				
- WOS.CCR:				
1985 to 2025				
- WOS.SCI:				
1900 to 2025				
- WOS.AHCI:				
1975 to 2025				
- WOS.BHCI:				
2005 to 2025				
- WOS.BSCI:				
2005 to 2025				
- WOS.ESCI:				
2005 to 2025				
- WOS.ISTP:				
1990 to 2025				
- WOS.SSCI:				
1900 to 2025				
- WOS.ISSHP:				
1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

12	TS=((Precarious Near/0 Living Near/0 Situation\$) or (Without Near/0 (home or housing)))	Web of Science Core Collection	3167	Thu Apr 03 2025 17:07:58 GMT-0400 (Eastern Daylight Time)
- WOS.IC:	1993 to 2025			
- WOS.CCR:	1985 to 2025			
- WOS.SCI:	1900 to 2025			
- WOS.AHCI:	1975 to 2025			
- WOS.BHCI:	2005 to 2025			
- WOS.BSCI:	2005 to 2025			
- WOS.ESCI:	2005 to 2025			
- WOS.ISTP:	1990 to 2025			
- WOS.SSCI:	1900 to 2025			
- WOS.ISSHP:	1990 to 2025			

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

13	TS=((Housing Near/0 Precari*) or (House Near/0 Precari*) or (Transition* adj Housing) or (Homeless Near/0 Shelter*))	Web of Science Core Collection	11888	Thu Apr 03 2025 17:08:17 GMT-0400 (Eastern Daylight Time)
- WOS.IC:	1993 to 2025			
- WOS.CCR:	1985 to 2025			
- WOS.SCI:	1900 to 2025			
- WOS.AHCI:	1975 to 2025			
- WOS.BHCI:	2005 to 2025			
- WOS.BSCI:	2005 to 2025			
- WOS.ESCI:	2005 to 2025			
- WOS.ISTP:	1990 to 2025			
- WOS.SSCI:	1900 to 2025			
- WOS.ISSHP:	1990 to 2025			

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

14	TS=((Housing Near/0 Instability) or (Hous* Near/0 Unstabl*) or (Housing Near/0 Eviction*) or (Housing Near/0 Insecurit*) or (Housing Near/0 Insecure) or (Unstabl* Near/0 housed) or (Vulnerabl* Near/0 housed) or housing first or (supportive Near/0 hous*) or (transitional Near/0 shelter*) or (marginal* Near/0 housed) or skid row)	Web of Science Core Collection	58345	Thu Apr 03 2025 17:08:35 GMT-0400 (Eastern Daylight Time)
- WOS.IC: 1993 to 2025				
- WOS.CCR: 1985 to 2025				
- WOS.SCI: 1900 to 2025				
- WOS.AHCI: 1975 to 2025				
- WOS.BHCI: 2005 to 2025				
- WOS.BSCI: 2005 to 2025				
- WOS.ESCI: 2005 to 2025				
- WOS.ISTP: 1990 to 2025				
- WOS.SSCI: 1900 to 2025				
- WOS.ISSHP: 1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

15	TS=((Street Near/0 involved) or (Seeking Near/0 shelter) or (No Near/0 fixed Near/0 address) or (Emergency Near/2 shelter*) or (Living Near/0 on Near/1 street))	Web of Science Core Collection	2618	Thu Apr 03 2025 17:08:45 GMT-0400 (Eastern Daylight Time)
- WOS.IC: 1993 to 2025				
- WOS.CCR: 1985 to 2025				
- WOS.SCI: 1900 to 2025				
- WOS.AHCI: 1975 to 2025				
- WOS.BHCI: 2005 to 2025				
- WOS.BSCI: 2005 to 2025				
- WOS.ESCI: 2005 to 2025				
- WOS.ISTP: 1990 to 2025				
- WOS.SSCI: 1900 to 2025				
- WOS.ISSHP: 1990 to 2025				

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

16	#15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6	Web of Science Core Collection	118029	Thu Apr 03 2025 17:09:02 GMT-0400 (Eastern Daylight Time)
- WOS.IC:	1993 to 2025			
- WOS.CCR:	1985 to 2025			
- WOS.SCI:	1900 to 2025			
- WOS.AHCI:	1975 to 2025			
- WOS.BHCI:	2005 to 2025			
- WOS.BSCI:	2005 to 2025			
- WOS.ESCI:	2005 to 2025			
- WOS.ISTP:	1990 to 2025			
- WOS.SSCI:	1900 to 2025			
- WOS.ISSHP:	1990 to 2025			

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

17 #16 AND #5

Web of
Science Core
Collection

845

Thu Apr 03 2025
17:09:12 GMT-
0400 (Eastern
Daylight Time)

- WOS.IC: 1993
to 2025

- WOS.CCR:
1985 to 2025

- WOS.SCI:
1900 to 2025

- WOS.AHCI:
1975 to 2025

- WOS.BHCI:
2005 to 2025

- WOS.BSCI:
2005 to 2025

- WOS.ESCI:
2005 to 2025

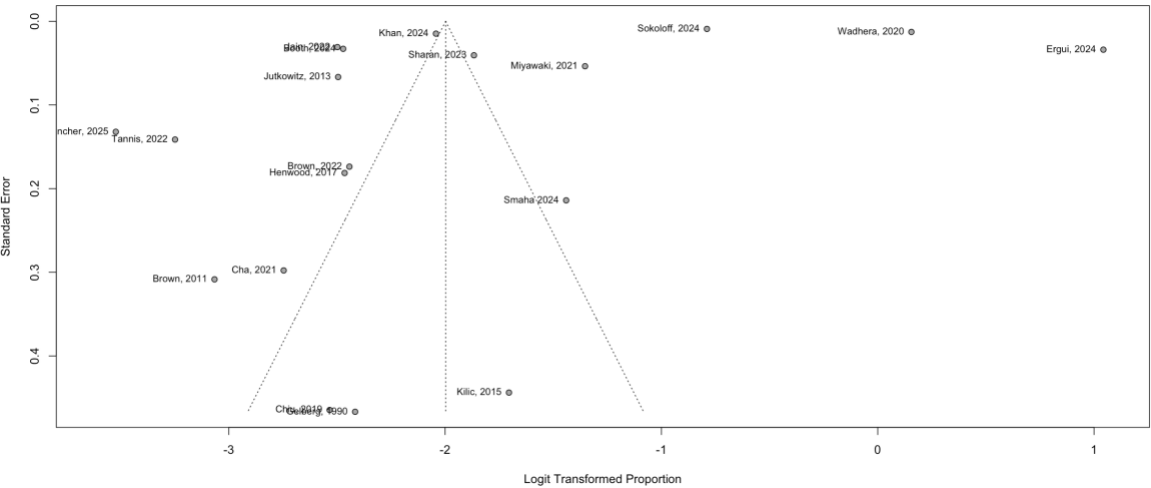
- WOS.ISTP:
1990 to 2025

- WOS.SSCI:
1900 to 2025

- WOS.ISSHP:
1990 to 2025

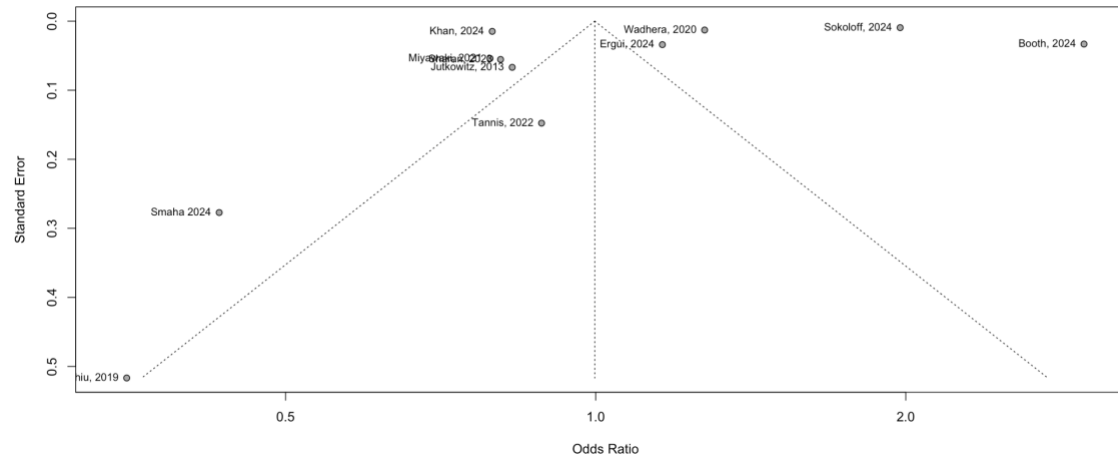
Supplementary Figure S2: Funnel plots for prevalence of heart failure, odds of heart failure, and heart failure mortality

A. Heart failure prevalence

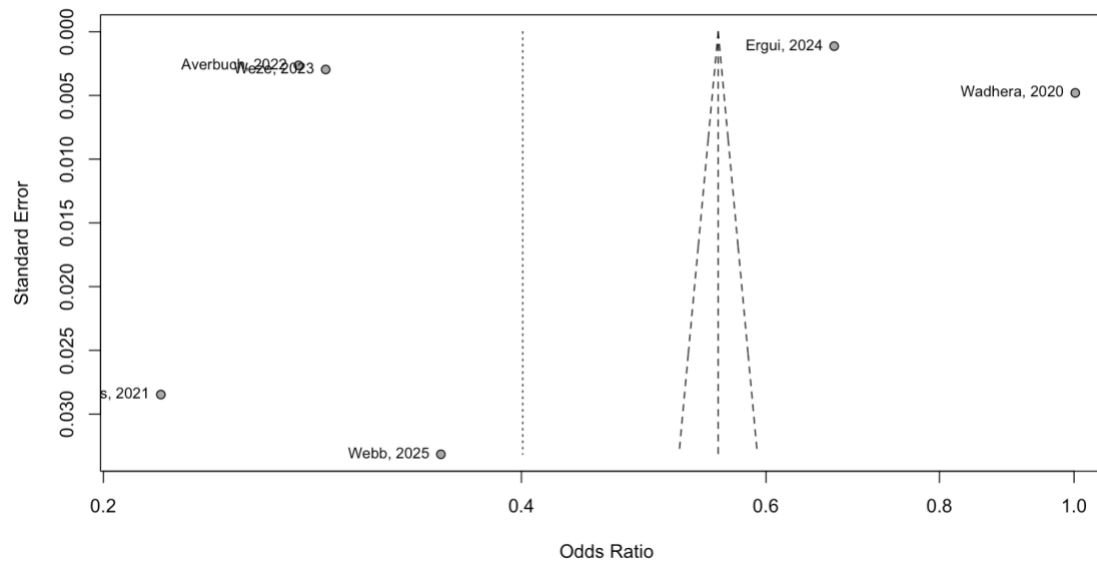


B. Odds of heart failure

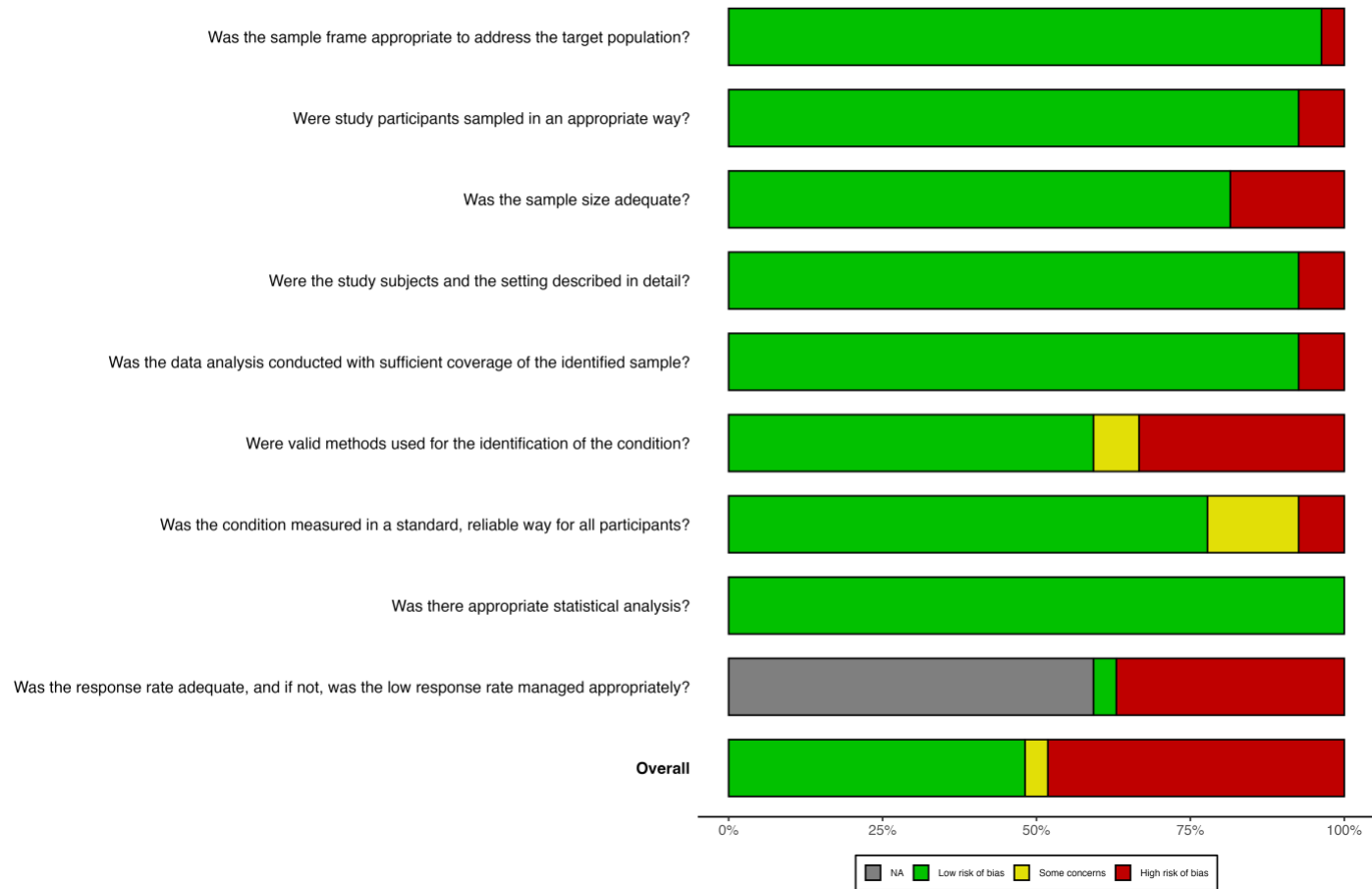
Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis



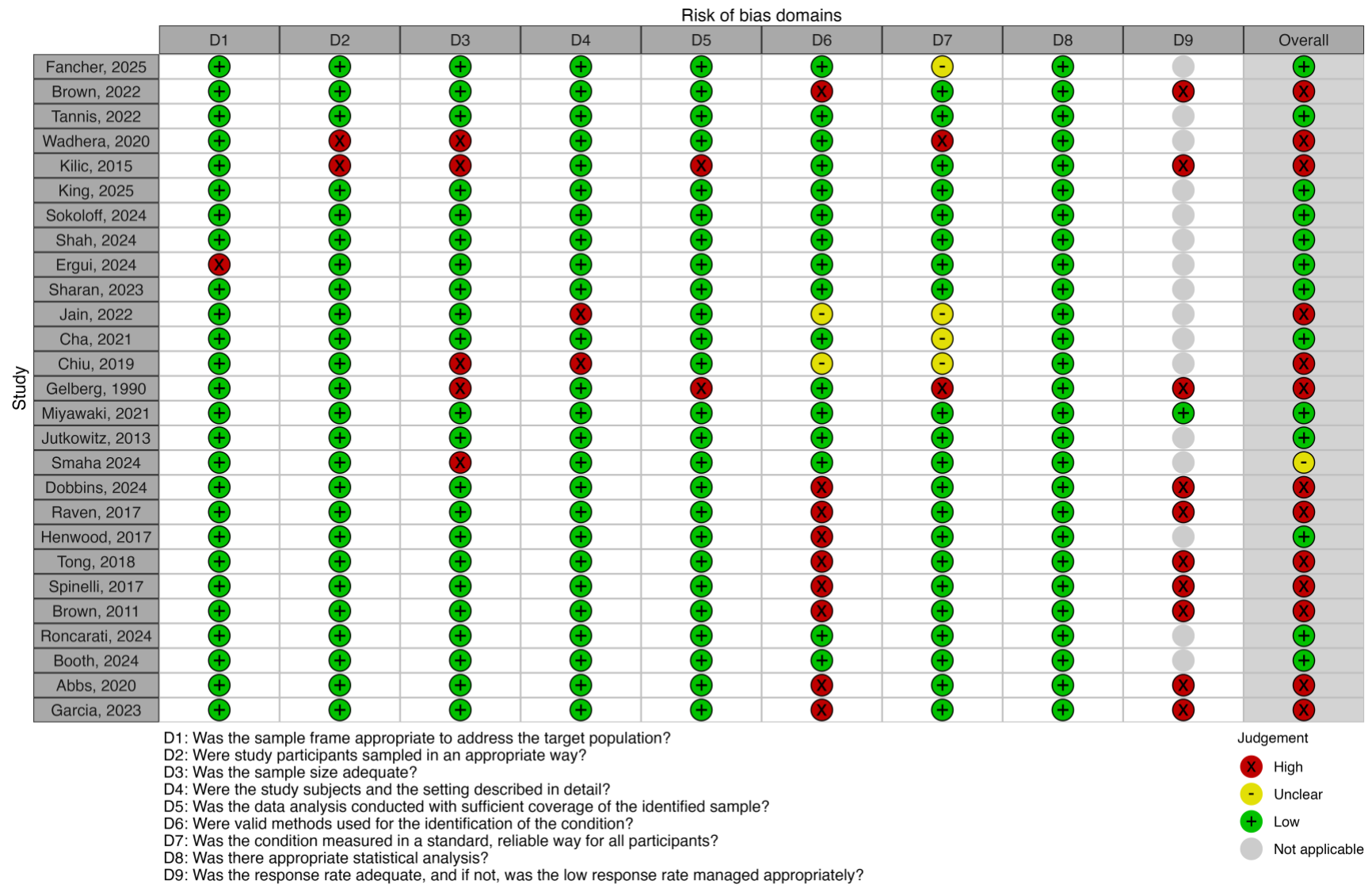
C. Risk of heart failure mortality



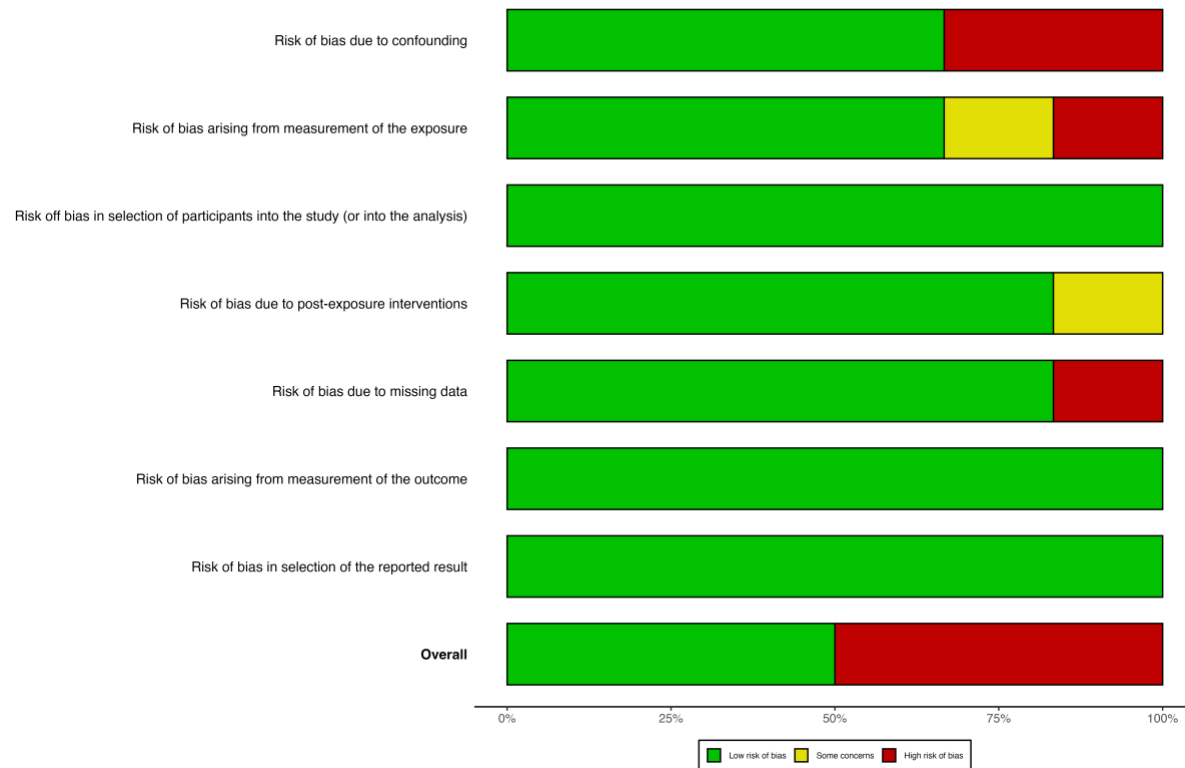
Supplementary Figure S3a: Risk of bias summary for the prevalence of heart failure



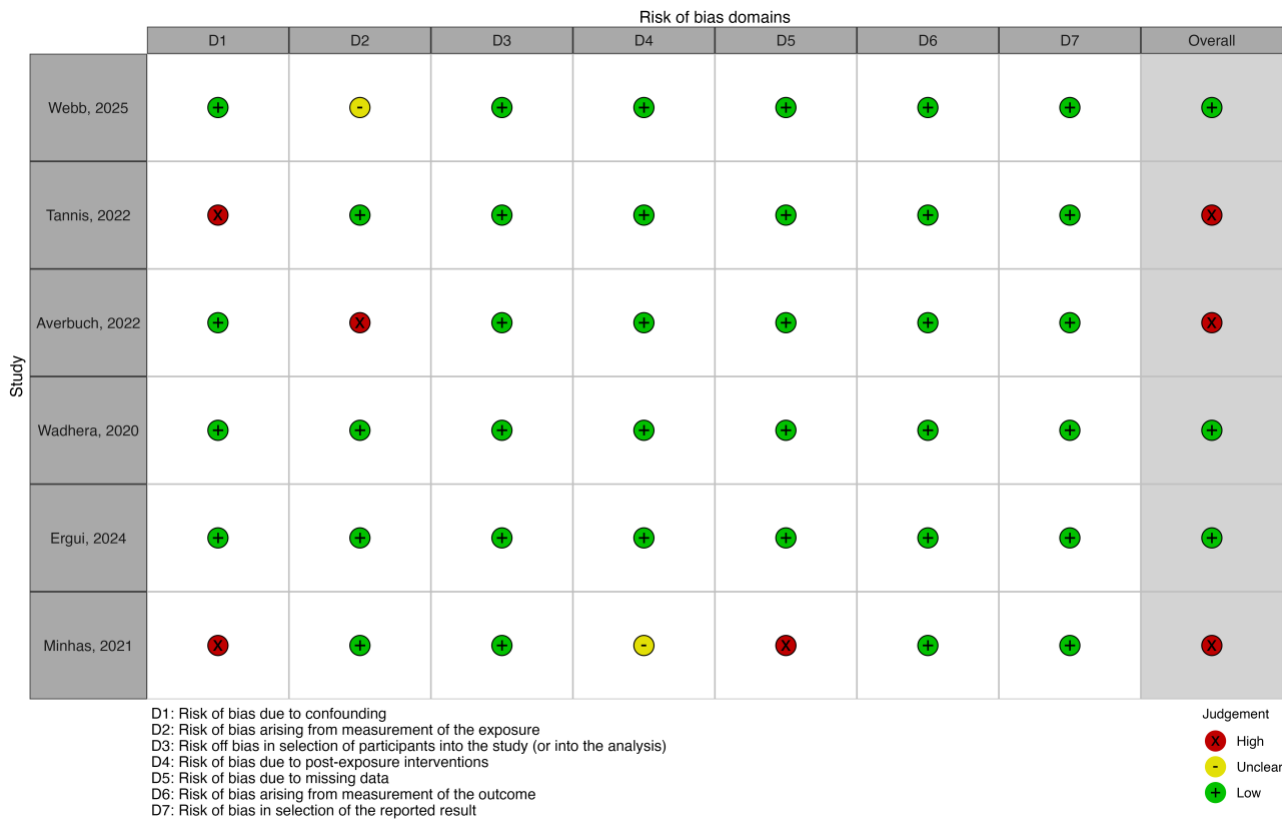
Supplementary Figure S3b: Risk of bias traffic light plot for the prevalence of heart failure



Supplementary Figure S3c: Risk of bias summary for risk of heart failure and risk of mortality



Supplementary Figure S3d: Risk of bias traffic light plot for risk of heart failure and risk of mortality



Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	N/A
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supplementary
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Section and Topic	Item #	Checklist item	Location where item is reported
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	N/A
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	PRISMA Flow
Study characteristics	17	Cite each included study and present its characteristics.	Supplementary
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Supplementary
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Section and Topic	Item #	Checklist item	Location where item is reported
	23b	Discuss any limitations of the evidence included in the review.	
	23c	Discuss any limitations of the review processes used.	
	23d	Discuss implications of the results for practice, policy, and future research.	
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Disclosures
Competing interests	26	Declare any competing interests of review authors.	Disclosures
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Supplementary

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

MOOSE Checklist

Item No	Recommendation	Reported on Page No
Reporting of background should include		
1	Problem definition	
2	Hypothesis statement	
3	Description of study outcome(s)	
4	Type of exposure or intervention used	
5	Type of study designs used	
6	Study population	
Reporting of search strategy should include		
7	Qualifications of searchers (eg, librarians and investigators)	
8	Search strategy, including time period included in the synthesis and key words	
9	Effort to include all available studies, including contact with authors	
10	Databases and registries searched	
11	Search software used, name and version, including special features used (eg, explosion)	
12	Use of hand searching (eg, reference lists of obtained articles)	
13	List of citations located and those excluded, including justification	
14	Method of addressing articles published in languages other than English	
15	Method of handling abstracts and unpublished studies	
16	Description of any contact with authors	

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Reporting of methods should include		
17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	
18	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	
19	Documentation of how data were classified and coded (eg, multiple raters, blinding and interrater reliability)	
20	Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)	
21	Assessment of study quality, including blinding of quality assessors, stratification or regression on possible predictors of study results	
22	Assessment of heterogeneity	
23	Description of statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated	
24	Provision of appropriate tables and graphics	Attached
Reporting of results should include		
25	Graphic summarizing individual study estimates and overall estimate	
26	Table giving descriptive information for each study included	Supplementary
27	Results of sensitivity testing (eg, subgroup analysis)	
28	Indication of statistical uncertainty of findings	Supplementary

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis

Prevalence and risk of heart failure among older adults experiencing homelessness: a systematic review and meta-analysis