

## A Comparative Study: Revealing the Prevalence of Dementia Among the Homeless Population

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The article "Prevalence of dementia among people experiencing homelessness in Ontario, Canada: a population-based comparative analysis" was published in The LANCET Public Health journal in April 2024. The authors, Richard G Booth, Monidipa Dasgupta, Cheryl Forchuk, et al., are affiliated with institutions such as the Health Information Research Center at Western Ontario University, Lawson Health Research Institute, and the Arthur Labatt Family School of Nursing. This study investigates the prevalence of dementia among the homeless population in Ontario, Canada, and conducts a comprehensive population-based cross-sectional comparative analysis compared with the general population and residents of low-income communities. It reveals a significant higher prevalence of dementia among the homeless population. Utilizing health-care administrative data, the study delves into the impact of housing stability on the incidence of dementia. The primary findings indicate a higher incidence of dementia among the homeless, particularly within the 55-74 age group, even after adjusting for demographic and health-related factors.

### 1 Experimental Data Analysis

The study analyzed data from 12,863 individuals experiencing homelessness and compared it with 475,544 individuals from the low-income group and 2,273,068 from the general population. Using the Poisson model to estimate prevalence, it was found that the prevalence of dementia among the homeless was 68.77 per 1,000 individuals, while the prevalence rates for the low-income and general populations were 62.76 and 51.70 per 1,000, respectively. It was observed that across both sexes in the age groups 55-64 and 65-74, the prevalence ratios were significantly higher when compared to the two control groups, ranging between 2.798 and 5.700.

Table 1 reveals that in 2019, the prevalence of dementia among the homeless population in Ontario, Canada, was 68.87 per 1000 people, significantly higher than in the low-income and general populations. The average age of the homeless group was lower, with a higher proportion of males, and fewer resided in rural areas. They had a higher frequency of using emergency and hospitalization services, and the incidence of head trauma and mental health conditions was also elevated. These findings underscore the healthcare needs of the homeless population and call for urgent targeted health strategies.

Table 2 shows age-adjusted dementia prevalence ratios, with the homeless population exhibiting higher rates of dementia across different age and gender strata compared to low-income and general populations. Particularly noteworthy is the elevated prevalence in younger age groups; homeless females aged 55-64 and males aged 45-54 have dementia prevalence rates approximately 3 to 5 times higher than those in low-income and general populations. These ratios suggest that the increase in risk diminishes with age, highlighting an urgent need for early intervention and support for the middle-aged homeless population.

Table 1 Baseline characteristics

	People experiencing Low-income group	Stdiff* (n=475544)	General population	Stdiff (n=2273068)	People experiencing Low-income group
Dementia prevalence in 2019, n (per 1000 population)	884(68.7)	29777 (62.6)	0.02	115952(51.0)	0.07
Age in years on Jan 1,2019					
Median (IQR)	57(51-65)	64(55-74)	0.50	63 (55-73)	0.47
45-54	5103(39.7%)	114097(24.0%)	0.34	554048(24.4%)	0.33
55-64	4316(33.6%)	133345(28.0%)	0.12	648850(28.5%)	0.11
65-74	2081(16.2%)	111529(23.5%)	0.18	550709 (24.2%)	0.20
75-84	978(7.6%)	76125(16.0%)	0.26	351232 (15.5%)	0.25
285	385(3.0%)	40448(8.5%)	0.24	168229(7.4%)	0.20
Sex					
Female	4993(38.8%)	262883(55.3%)	0.33	1215898(53.5%)	0.30
Male	7870(61.2%)	212661(44.7%)	0.33	1057170(46.5%)	0.30
Rural resident	897(7.0%)	75846(15.9%)	0.28	346906(15.3%)	0.27
Neighbourhood income quintile					
Missing	NA	0		6176 (0.3%)	
Quintile 1(lowest)	NA	475544(100.0%)		475544(20.9%)	
Quintile 2	NA	0		464204(20.4%)	
Quintile3	NA	0		453573 (20.0%)	
Quintile4	NA	0		434666(19.1%)	
Quintile5 (highest)	NA	0		438905(19.3%)	
Previous health service use,mean (SD)					
Number of emergency department visits (in the previous year)	3.06 (7.93)	0.93 (2.07)	0.37	0.73 (1.70)	0.41
Number of hospital admissions (in the previous 5 years)	192(3.80)	0.83 (1.80)	0.37	0.68(1.51)	0.43
Number of primary care physician visits (in the previous year)	13.17(19.08)	8.25 (10.64)	0.32	7.29(9.17)	0.39
Comorbidities (previous diagnosis or treatment recorded)					
Head trauma	2883(22.4%)	42664(9.0%)	0.38	167607(7.4%)	0.43
Stroke or transient ischaemic attack	634(4.9%)	24680(5.2%)	0.01	99040(4.4%)	0.03
Diabetes	3520(27.4%)	143240(30.1%)	0.06	570771(25.1%)	0.05
Hypertension	5804(45.1%)	273076(57.4%)	0.25	1227954(54.0%)	0.18
Coronary artery disease	1605(12.5%)	62687(13.2%)	0.02	260792(11.5%)	0.03
Congestive heart failure	1002(7.8%)	41705(8.8%)	0.04	164682(7.2%)	0.02

Continued Table 1

	People experiencing Low-income group	Stdiff*	General population	Stdiff	People experiencing Low-income group
Chronic obstructive pulmonary disease	4267(33.2%)	117453(24.7%)	0-19	443265(19.5%)	0-31
Parkinsonism	236(1.8%)	8345(1.8%)	0-01	35191(1.5%)	0-02
Epilepsy	1366(10.6%)	21045(4.4%)	0-24	77224(3.4%)	0-29
Multiple sclerosis	197(1.5%)	5149(1.1%)	0-04	23489(1.0%)	0-04
HIV	245(1.9%)	2010(0.4%)	0-14	5208(0.2%)	0.16
Schizophrenia spectrum and other psychotic disorders	1824(14.2%)	9475(2.0%)	0-46	24025(1.1%)	0-51
Mood or anxiety disorders	5132(39.9%)	114136(24.0%)	0-35	500348(22.0%)	0-39
Substance-related and addictive disorders	3775(29.3%)	18082(3.8%)	0-73	54345(2.4%)	0-79
Deliberate self-harm	998(7.8%)	4075(0.9%)	0-34	11607(0.5%)	0-37
Other mental health conditions	2613(20.3%)	40221(8.5%)	0-34	170478(7.5%)	0-38

Note: Data are n (%) unless specified otherwise. stdiff=standardised difference. NA=not applicable. \*Compared with individuals experiencing homelessness. +ICES-derived disease Surveillance cohorts (from 1991 to 2018) were used to capture diagnosis or treatment for diabetes, hypertension, congestive heart failure, chronic obstructive pulmonary Disease, and HIV; for all other conditions, a 5-year lookback (2014-18) was applied.

Table 2 Age-adjusted dementia prevalence ratios comparing people experiencing homelessness to the low-income and general population comparator groups within age and sex strata

	People experiencing homelessness vs low-income group	People experiencing homelessness vs general population group
Female		
45-54 years	1.82(1.06-3.12)	2.84(1.67-4.81)
55-64 years	3.45(2.65-4.48)	4.78(3.70-6.17)
65-74 years	2.98(2.46-3.62)	3.96(3.28-4.79)
75-84 years	1.56(1.30-1.88)	1.72(1.42-2.06)
≥85 years	0.97(0.77-1.23)	1.00(0.79-1.26)
Male		
45-54 years	3.10(2.24-4.27)	4.85(3.58-6.58)
55-64 years	3.39(2.80-4.09)	5.00(4.17-5.99)
65-74 years	3.25(2.78-3.81)	4.42(3.79-5.15)
75-84 years	2.28(1.92-2.70)	2.68(2.27-3.18)
≥85 years	1.19(0.90-1.57)	1.29(0.98-1.71)

Note: The table shows prevalence ratios (95% CIs). Prevalence ratios were calculated using modified Poisson regression while adjusting for age for each of the ten age and sex strata.

Figure 1 displays the age-standardized dementia prevalence rates for men and women across various age groups within the general population, the low-income group, and the homeless population. For both genders, the homeless group shows a significant increase in dementia prevalence within the middle-age brackets, facing a

higher risk at a younger age compared to other groups. The trend indicates that the prevalence rate for the homeless population spikes between the ages of 55 to 75, with an especially notable increase for men aged 45-54. The data underscores the necessity for early dementia-related interventions for the homeless population, especially as the prevalence rates for the older age groups appear to converge, suggesting that the greatest disparity occurs within the younger age cohorts.

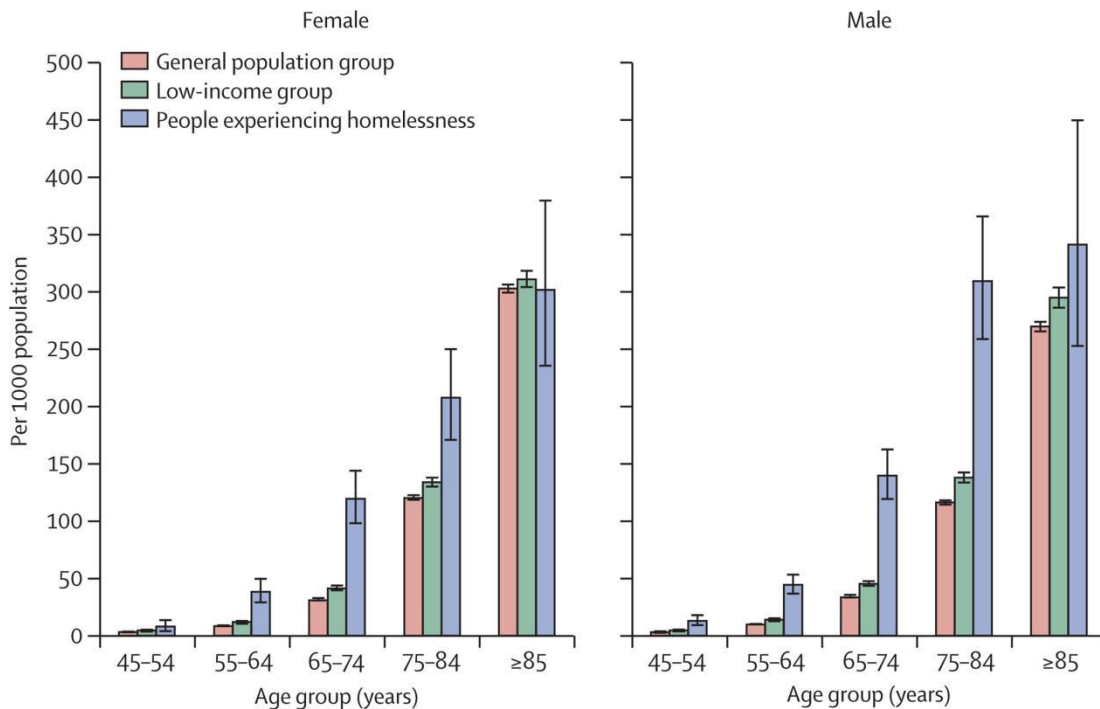


Figure 1 Age-standardised dementia prevalence among age and sex strata by population group

Table 3 outlines the characteristics of the homeless population, comparing individuals with and without a diagnosis of dementia. The results indicate that those diagnosed with dementia are generally older, with a median age of 72, in contrast to the median age of 56 among those without a diagnosis. Individuals with dementia also have a higher rate of healthcare service usage, as evidenced by more frequent emergency department visits and hospital admissions. Moreover, the presence of comorbidities is significantly higher in the dementia group, particularly head trauma, stroke, and chronic conditions such as hypertension and coronary artery disease. The prevalence of substance-related disorders is lower within the dementia subgroup. This table emphasizes the health disparities faced by homeless individuals with dementia, indicating that they have more complex health needs and greater engagement with healthcare services, highlighting the potential for medical intervention.

Figure 2 is an odds ratio (OR) analysis of various factors associated with a dementia diagnosis among the homeless population. The results show a significant increase in dementia risk with age. Women have a lower chance of being diagnosed with dementia compared to men. The number of emergency department visits is associated with a slight increase in the risk of dementia, while the number of hospital admissions is not a significant factor. Notably, conditions such as Parkinson's disease, epilepsy, and multiple sclerosis more than double the risk of dementia, and HIV nearly triples it. Substance-related disorders and deliberate self-harm show a reduced OR, indicating a negative correlation with dementia diagnoses. These findings emphasize the complexity of health conditions that lead to dementia among the homeless population and could guide targeted interventions.

Table 3 Characteristics of people experiencing homelessness with and without a diagnosis of dementia

	People experiencing homelessness with a diagnosis of dementia(n=884)	People experiencing homelessness without a diagnosis of dementia(n=11979)	Pvalue
Median(IQR)	72(64-81)	56(50-64)	<0.0001
45-54	58(6.6%)	5045(42.1%)	<0.0001
55-64	183(20.7%)	4133(34.5%)	
65-74	273(30.9%)	1808(15.1%)	
75-84	248(28.1%)	730(6.1%)	
285	122(13.8%)	263(2.2%)	
Sex			
Female	366(41.4%)	4627(38.6%)	0.10
Male	518(58.6%)	7352(61.4%)	0.10
Rural resident	77(8.7%)	820(6.8%)	0.024
Previous health service use, mean(SD)			
Number of emergency department visits (in the previous year)	4.68(12.55)	2.94(7.46)	<0.0001
Comorbidities(previous diagnosis or treatment recorded)*			
Head trauma	247(27.9%)	2636(22.0%)	<0.0001
Stroke or transient ischaemic attack	117(13.2%)	517(4.3%)	<0.0001
Diabetes	365(41.3%)	3155(26.3%)	<0.0001
Hypertension	644(72.9%)	5160(43.1%)	<0.0001
Coronary artery disease	222(25.1%)	1383(11.5%)	<0.0001
Congestive heart failure	157(17.8%)	845(7.1%)	<0.0001
Chronic obstructive pulmonary disease	381(43.1%)	3886(32.4%)	<0.0001
Parkinsonism	66(7.5%)	170(1.4%)	<0.0001
Epilepsy	131(14.8%)	1235(10.3%)	<0.0001
Multiple sclerosis	28(3.2%)	169(1.4%)	<0.0001
HIV	21(2.4%)	224(1.9%)	0.29
Schizophrenia spectrum and other psychotic disorders	108(12.2%)	1716(14.3%)	0.083
Mood or anxiety disorders	347(39.3%)	4785(39.9%)	0.69
Substance-related and addictive disorders	167(18.9%)	3608(30.1%)	<0.0001
Deliberate self-harm	48(5.4%)	950(7.9%)	0.0073
Other mental health conditionst	226(25.6%)	2387(19.9%)	<0.0001

Note: Data are n (%) unless specified otherwise. \*ICES-derived disease surveillance cohorts (from 1991 to 2018) were used to capture diagnosis or treatment for diabetes, hypertension, congestive heart failure, chronic obstructive pulmonary disease, and HIV; for all other conditions, a 5-year lookback (2014-18) was applied.

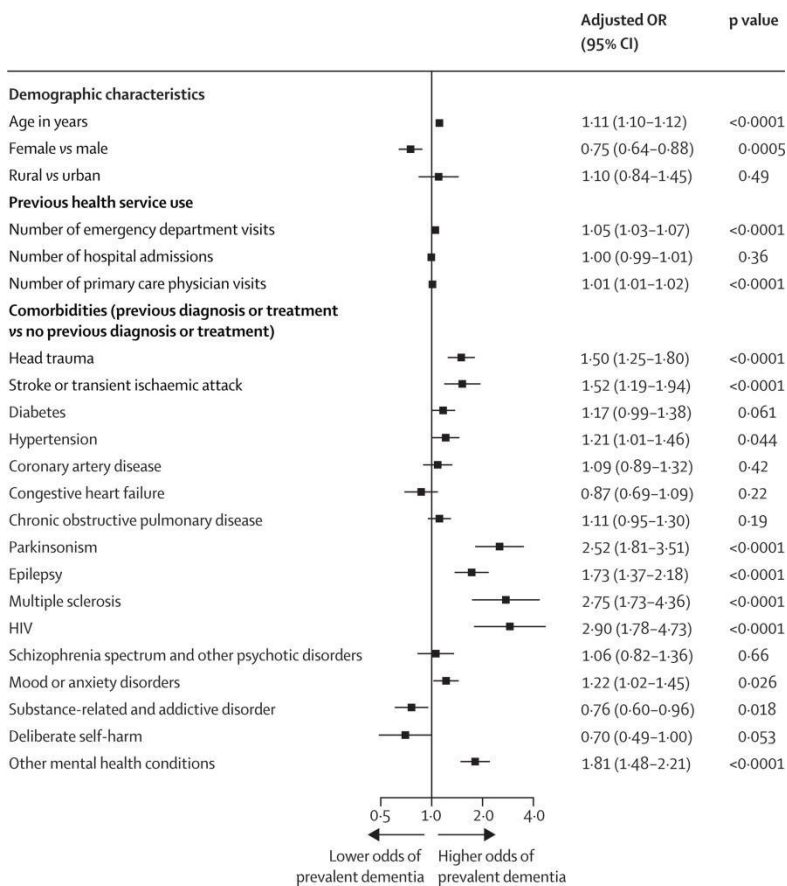


Figure 2 Factors associated with a dementia diagnosis among people experiencing homelessness

## 2 Analysis of Research Findings

The study results indicate that the prevalence of dementia is significantly higher in the homeless population compared to the housed population, suggesting that homelessness could lead to or exacerbate the incidence of dementia. Moreover, the prevalence ratio is higher in the middle-aged group, indicating an earlier onset of dementia in this demographic. After comprehensive consideration and adjustment for age, gender, geographic location, and health factors associated with dementia, the study further confirmed a significant association between homelessness and dementia. Specifically, the prevalence of dementia in the homeless population is 77.1% higher than that in the low-income group and 79.0% higher compared to the general population. These findings reveal the health risks faced by the homeless population and emphasize the importance of targeted attention and intervention for them.

## 3 Evaluation of the Research

This study, through its rigorous methodology, extensive data sets, and comprehensive analysis, provides insights into the relationship between homelessness and dementia, demonstrating the necessity of developing specialized care strategies for this vulnerable group. The research not only fills a significant gap in the literature but also offers new understanding by providing population-level evidence of increased dementia prevalence among the homeless. However, the study's limitation in identifying homeless individuals through medical records may result in the exclusion of those who have not interacted with the health system, potentially underestimating the actual prevalence rates.

## 4 Conclusions

This study is pioneering and underscores the impact of dementia within the homeless population on public health. Given its significance, we urge immediate action from all sectors of society to enhance dementia screening efforts, provide appropriate housing support for the homeless, and develop and implement comprehensive care plans to address this critical issue. In the field of dementia care, addressing the unique challenges faced by the homeless is

crucial for improving their health conditions and reducing social disparities. We also call for collaboration and a coordinated response from healthcare providers, policymakers, and community organizations to tackle this increasingly severe social problem together.

### **5 Access the Full Text**

Booth, R. G., Dasgupta, M., Forchuk, C., & Shariff, S. Z. (2024). Prevalence of dementia among people experiencing homelessness in Ontario, Canada: a population-based comparative analysis. *The Lancet Public Health*, 9(4), e240-e249. [https://doi.org/10.1016/S2468-2667\(24\)00022-7](https://doi.org/10.1016/S2468-2667(24)00022-7)

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