

EVIDENCE BRIEF

Homelessness and Health Outcomes: What are the associations?



April 2019

Key Messages

- The relationships between homelessness and health are complex, varied and bi-directional.
- From review-level evidence, we identified specific health outcomes associated with homelessness. These include infectious diseases (e.g., sexually transmitted infections); mental health issues, including substance use disorders; cognitive impairments; foot issues; chronic diseases (e.g., hypertension, diabetes) and injuries.
- Homelessness is a multi-dimensional problem and homeless populations are likely underrepresented in the published literature.

- Identifying specific associations from review-level evidence informs planning and priority setting by public health practitioners in their areas of work specific to improving the health of homeless individuals.

Issue and Research Question

The purpose of this evidence brief is to provide an overview of the associations between homelessness and health from review-level evidence. The broad approach is to identify specific health outcomes associated with homelessness to inform planning and priority-setting by Ontario public health practitioners.

According to the Canadian Observatory on Homelessness (2012), homelessness “describes the situation of an individual, family or community without stable, permanent, appropriate housing or the immediate prospect, means and ability of acquiring it.”¹ Homelessness involves a range of housing and shelter circumstances: unsheltered, emergency sheltered, provisionally accommodated and those at risk of homelessness. At-risk individuals are not homeless, but their current economic and/or housing situation is precarious or does not meet public health and safety standards.¹

While recognized as a growing problem,² the extent of homelessness is difficult to gauge. In Canada, the data is incomplete and there are several different measures. Statistics Canada does not collect annual nor monthly data on the number of homeless people, but has information on the number living in shelters. For example, 22,190 people in Canada (8,785 in Ontario) declared a shelter as their primary residence in the 2016 census.³ This underestimates those living on the streets, with family or friends and those turned away by full shelters. To provide a more accurate snapshot of homelessness across Canada, other estimates have been developed. For example, a Point-in-Time (PiT) count approach from 2016 was supported by the federal government. Counts included those in shelters and those sleeping outside or in transitional facilities. Across 32 communities, 5,954 people were identified as homeless or uncertain where they would sleep that night. At-risk groups could be identified. Of those 5,954, 60% were male and most were aged 24 to 49 years. Thirty seven percent identified as Aboriginal or Indigenous, nearly 5% were military or RCMP veterans and 4% were a refugee or recent immigrant.²

In Ontario, the 2018 homelessness enumeration was the first to be conducted by all municipalities and is planned to be completed every two years to improve awareness of the issues, monitor trends and progress towards reducing homelessness.⁴ At this time, preliminary 2018 findings have been reported by some individual municipalities (e.g., Bruce County, Hastings County, Stratford),⁵ but province-wide estimates are not yet available.

Understanding the extent of homelessness and the experiences of those who are homeless enables communities and services to develop supports to reduce it.² The way people become homeless does not follow the same pathway and causality cannot be clearly identified.⁶ Homelessness is a result of a complex interaction of factors at the individual level (e.g., education, mental health issues), as well as the societal level (e.g., high housing costs, racism, poverty).⁶ Similarly, the relationships between

homelessness and health is complex and bi-directional. Homelessness has a direct impact on health. For example, crowded shelters can expose individuals to communicable diseases and long periods of walking or standing and prolonged exposure of feet to moisture and cold can lead to infections.⁶ Additionally, obtaining medication and adhering to medical recommendations for physical or mental illness (e.g., dietary restrictions or rest requirement) is often difficult.⁶ Treatment and prevention of health issues are often neglected due to competing needs for food and shelter.⁷ Overall, individuals who are homeless are at risk for a range of adverse health outcomes.⁶

In the other direction, health status can contribute to homelessness.⁶ For example, certain health conditions (e.g., mental health issues) may influence the onset of homelessness and worsen the homeless state. Other factors, such as substance use or lack of social support, can work in both directions since they are independent risk factors for poor health and may increase an individual's risk of homelessness.⁶ In the 2016 Ontario Point-in-Time (PiT) count data, for example, addictions or substance use was the most common reason for being homeless for the 24 to 49 years age group.² Recent coroner data for homeless individuals in Toronto (2017–18) indicates that a greater number of deaths were caused by drug toxicity (n= 38) compared to other modes, such as cardiovascular disease (n= 18) or cancer (n = 9).⁸

Overall, homeless individuals have reduced life expectancy. A 2009 study using Canadian census data reported the probability of survival to various ages among those homeless or marginally housed compared to the national cohort. Both men and women living in shelters, rooming houses or hotels had reduced probability of living to 75 years of age.⁹

The goal of this evidence brief is to identify and describe, from best available review level evidence, the health outcomes associated with homelessness. This will inform public health practitioners pursuing programmatic work addressing homelessness and health.

This evidence brief asks: What health outcomes are associated with homelessness?

Methods

A literature search was conducted on February 27, 2018 by Public Health Ontario (PHO) Library Services for articles published between 2008 to 2018. The search involved three databases, including MEDLINE, CINAHL and PsychINFO. The following search terms were included, but were not limited to: homeless, street living, shelters, housing, reviews, meta-analyses. The full search strategy is available upon request from PHO.

Articles were eligible for inclusion if they were review-level articles, published between 2008 and 2018 and examined the association between homelessness and health outcomes. Articles that focused on behaviours, such as risky sexual behaviour, alcohol use, intravenous (IV) drug use were excluded, while their corresponding health outcomes were included (e.g., sexually transmitted infections, alcohol dependence or infections caused by IV use). Additionally, articles examining interventions targeting homeless individuals were excluded.

The HealthEvidence.org quality assessment tool was used to appraise the included reviews.¹⁰ Articles that were appraised to be low quality were subsequently excluded. Key information was extracted from the remaining included articles. Detailed methods regarding screening and quality appraisal are available upon request.

Main Findings

The search identified 463 articles, from which 27 articles met the inclusion criteria. Ten articles were excluded due to poor quality. Of the remaining 17 articles, 12 were systematic reviews and five were systematic reviews with meta-analyses. These reviews included studies from various jurisdictions, including the US, Australia, France, Germany, the Netherlands, Greece, South Africa, the Czech Republic, Korea, Canada, Italy, Nepal, Russia, Ukraine, Ecuador, Bolivia and Brazil. The most commonly reported jurisdiction was the US. The findings are organized by broad health outcome categories: infectious diseases, mental health and other health outcomes.

Infectious Diseases

SEXUALLY TRANSMITTED INFECTIONS (STIS)

Three systematic reviews examined the prevalence rates of sexually transmitted infections (STIs) among homeless adults¹¹ and youth (ages 10 to 23).^{12,13} A recent review by Williams et al., (2018) found that among US homeless adults, the overall prevalence rates of STIs ranged from 2.1% to 6.7%.¹¹ Prevalence rates of chlamydia ranged from 6.4% to 6.7% and rates of gonorrhea ranged from 0.3% to 3.2%.¹¹ Syphilis was the least commonly reported STI, with a prevalence of 1.1%.¹¹ Higher STI prevalence was associated with intimate partner violence, injection and non-injection substance use, incarceration history and homelessness severity (measured by number episodes of homelessness, number of years homeless or prior shelter stays).¹¹

Caccamo et al., (2017) examined STI prevalence rates among homeless youth ages 12 to 23.¹² They found that among homeless youth, the overall STI prevalence rates ranged from 6.0% to 32.0%.¹² Rates for girls ranged from 16.7% to 46.0% while rates for boys ranged from 9.0% to 13.1%.¹² Chlamydia and gonorrhea were the most commonly reported STIs among homeless youth with prevalence rates ranging from 18.3% to 40.9%¹³ and 0.4% to 24.9%,¹² respectively. Other reported STIs (and their reported prevalence) included herpes (1.1% to 11.8%), genital warts (3.5%), syphilis (0.2% to 3.5%), human papilloma virus (HPV) (1.3%) and *Trichomonas vaginalis* (0.7%).¹² Among this population, STI prevalence was associated with substance use, high-risk sexual behaviours and exposure to violence.¹²

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

One systematic review and meta-analysis¹⁴ and three systematic reviews^{13,15,16} examined the prevalence of human immunodeficiency virus (HIV) among homeless youth and adults. Findings from the systematic review and meta-analysis of homeless adults reported prevalence rates of HIV ranging from 0.3% to 21.1% — the random effects pooled prevalence was 4.8% (95% CI 3.6–6.0).¹⁴

Two systematic reviews examined the prevalence rates of HIV among homeless youth (ages 10 to 20).^{13,15} They reported prevalence rates of HIV ranging from 1.7% to 42.4%.^{13,15} The prevalence of HIV was found to vary by world region: 0% and 5.0% (America), 2.0% to 37.0% (Europe) and 0% to 20.0% (Asia).¹⁵ Males were more likely to be HIV positive than females.¹³

Lastly, one systematic review examined the prevalence rates of HIV among homeless individuals who identify as Lesbian, Gay, Bisexual and Transgender and Queer (LGBTQ).¹⁶ The percentage of individuals who were HIV positive ranged from 15.0% to 48.0%.¹⁶ Latino cisgender (i.e., gender identity matches the sex that they were assigned at birth) males were found to have the highest HIV prevalence rates, followed by White and African American males, respectively.¹⁶

HEPATITIS

One systematic review and meta-analysis¹⁴ and two systematic reviews^{12,13} examined the prevalence of hepatitis among homeless youth and adults. The systematic review and meta-analysis of homeless adults reported prevalence rates of hepatitis C ranging from 3.9% to 36.2%; the random effects pooled prevalence was 20.3% (95% CI 15.5–25.2).¹⁴ The systematic reviews examined the prevalence rates of both hepatitis B and C among youth ages 10 to 23.^{12,13} They reported prevalence rates ranging from 1.4% to 17.0% for hepatitis B and 3.8% to 12.0% for hepatitis C, respectively.^{12,13}

TUBERCULOSIS

One systematic review and meta-analysis examined the prevalence of tuberculosis among homeless individuals.¹⁴ Among the 10 included studies within the review, prevalence rates of tuberculosis ranged from 0.2% to 7.7%.¹⁴ The random effects pooled prevalence was 1.1% (95% CI: 0.8–1.5).¹⁴

Mental Health

MENTAL HEALTH ISSUES, INCLUDING SUBSTANCE USE DISORDERS

Two systematic reviews and meta-analyses^{17,18} and three systematic reviews^{13,16,19} examined mental health issues and illnesses among homeless children and adults.

One recent systematic review and meta-analysis by Schreiter et al., (2017) examined the pooled prevalence rates of various mental health issues among homeless individuals in Germany. The authors did not examine comorbidities.¹⁷ They concluded that the rate of mental illness is higher among homeless individuals than the general population, particularly for substance-related disorders, such as alcohol dependency.¹⁷ The overall pooled prevalence of mental illness was 77.4%, (95% CI: 71.3 to 82.9).¹⁷ The most prevalent mental illness was alcohol dependency 55.4% (95% CI: 49.2 to 61.5), followed by personality disorders 29.1% (95% CI: 5.6 to 59.5), anxiety disorders 17.6% (95% CI: 12.9 to 22.8), affective disorders 15.2% (95% CI: 9.8 to 21.5), drug dependency 13.9% (95% CI: 7.2 to 22.2), depression 11.6% (95% CI: 4.4 to 21.30) and psychotic illness 8.3% (95% CI: 5.4 to 11.80).¹⁷ In comparison, data from the German National Health Interview and Examination Survey for Adults between 2008–11 (representative of the population) reported the following prevalence rates: overall

mental illness (19.8%), alcohol dependency (2.5%), anxiety disorders (9%), affective disorders (6.3%), depression (5.6%) and psychotic illness (1.5%).

An older systematic review and meta-analysis by Fazel et al., (2008) reported similar findings.¹⁸ They too found that the most common mental illness among homeless individuals in western countries was alcohol dependence (prevalence 37.9% (95% CI 27.8% to 48.0%)), followed by drug dependence 24.4% (95% CI 13.2% to 35.6%), personality disorders, 23.1% (95% CI 15.5% to 30.8%), psychotic illness 12.7% (95% CI 10.2% to 15.2%) and depression 11.4% (95% CI 8.4% to 14.4%).¹⁸

One systematic review by Medlow et al., (2014) examined rates of mental illness among homeless youth (ages 10 to 19).¹³ They found that common mental illnesses experienced by this population included substance use disorders, depression and post-traumatic stress disorder (PTSD).¹³ Homeless youth who identified as LGBTQ were more likely to be depressed and experience PTSD compared to their heterosexual homeless peers.¹³ Ecker et al., (2017) conducted a systematic review of homeless LGBTQ adults and also found that mood disorders, specifically depression, were prevalent among this population.¹⁶

Lastly, Bassuk et al., (2015) conducted a systematic review examining mental health issues among pre-school and school-aged homeless children.¹⁹ They found that school-aged homeless children experienced higher rates of mental health/behavioural disorders compared to housed school-aged children; however, no differences were found between homeless and housed pre-school aged children.¹⁹

COGNITIVE FUNCTION

One systematic review and meta-analysis¹⁷ and two systematic reviews^{20,21} examined cognitive performance among homeless youth and adults. The systematic review and meta-analysis examined the prevalence of cognitive impairment among homeless individuals in Germany; the pooled prevalence of cognitive impairment was 11.7% (95% CI 6.0 to 18.9).¹⁷ The two systematic reviews examined cognitive performance among homeless youth (ages 15-24)²⁰ and adults,²¹ respectively. Homeless youth were found to have impaired cognitive performance when compared with non-disadvantaged youth, particularly in areas of attention, executive function and general cognitive functioning.²⁰ They did, however, demonstrate higher levels of creativity/divergent thinking when compared with housed individuals with low socioeconomic status (SES) youth.²⁰ Similarly, some homeless adults were found to exhibit deficits in global cognitive functioning according to cognitive assessment instruments, such as the Mini Mental State Evaluation, particularly in areas of attention, speed of cognitive processing and executive function.²¹

MEMORY

Three systematic reviews examined memory function among homeless individuals (including both youth and adults), using cognitive assessment instruments (e.g., WMS-R verbal memory index).²⁰⁻²² All three reviews reported memory deficits among homeless individuals.²⁰⁻²² Impairments were most commonly found for verbal and overall/general memory.²² Youth demonstrated particular impairments in working memory,²⁰ while adults demonstrated impairments in verbal and visual memory.²¹

Other Health Outcomes

NUTRITION DEFICIENCIES

One systematic review examined the nutritional deficiencies among homeless adults, specifically those with problem drinking.²³ The most common nutrient deficiencies reported were vitamin B1 (prevalence of deficiency ranging from zero to 51.0%) and vitamin C (prevalence of deficiency ranging from 29.0% to 95.0%).²³ Other nutrient deficiencies reported included vitamins B2, B6, B9, B12 and vitamin E; the prevalence of these deficiencies was 0 to 23.0%.²³

FOOT ISSUES

One systematic review examined the prevalence of foot-related conditions among homeless individuals.²⁴ The authors found that homeless individuals were more likely to have foot problems (e.g., infections, foot pain, functional limitations with walking and improperly-fitting shoes) compared to housed individuals.²⁴ They found that the prevalence of foot-related problems ranged from 9.0% to 65.0% across study populations.²⁴ Common foot-related issues were corns and calluses (prevalence rates: 7.7% to 57.0%), nail pathologies (prevalence rates: 15.0% to 65.0%), infections (prevalence rates: 3.2% to 38.0%) and injuries (prevalence rates: 24.0% to 43.0%).²⁴ Other foot-related issues experienced by homeless individuals include foot pathologies related to chronic diseases (e.g., diabetes), bunions, hammertoes, gout, plantar warts, foot ulcers and frostbite.²⁴

HYPERTENSION/DIABETES

One systematic review and meta-analysis examined the prevalence of hypertension and diabetes among US homeless adults.²⁵ The pooled prevalence of self-reported hypertension was 27.0% (95% CI= 23.8-29.9), while the prevalence measured through physiological measures (e.g., blood pressure) was 25.7% (95% CI: 19.5-31.9).²⁵ The pooled prevalence of self-reported diabetes was 8.0% (95% CI= 6.8-9.2), while the prevalence measured through physiological measures was 12.4% (95% CI: 8.9-15.9).²⁵ When compared with prevalence rates from the National Health Interview Survey, the overall prevalence rates of hypertension and diabetes among homeless individuals were not found to be different from those of the general population (when adjusted for year).²⁵

INJURIES

Two systematic reviews examined injury rates; both found that homeless individuals experience injuries at greater rates than non-homeless individuals.^{7,26} One review reported rates of traumatic brain injuries among homeless individuals ranging from 8.0% to 53.0%.²⁶ Individuals with a history of a traumatic brain injury were found to be more susceptible to subsequent injuries.²⁶ A second review examined the injuries identified through emergency department visits in the US.⁷ Commonly reported injuries included assault-related injuries and injuries related to the material conditions of homelessness, such as sleeping on hard surfaces, carrying heavy bags or cooking with fire (i.e., burns).⁷

Discussion and Conclusions

Overall, the findings from this evidence brief highlight a number of health outcomes experienced by homeless individuals that can be used to help inform the planning and prioritizing of efforts specific to improving the health of this population. The outcomes reported include infectious diseases (e.g., sexually transmitted infections), deficits in cognitive functioning and memory and a wide range of mental health issues, including alcohol dependency. Other health outcomes identified among homeless individuals include nutritional deficiencies among adults with problem drinking, hypertension, diabetes, foot problems (e.g., corns/calluses, nail pathologies, infections) and a range of injuries (e.g., traumatic head injuries).

Some studies compared the health outcomes of homeless individuals with housed individuals or individuals from the general population. These studies found that homeless individuals experience higher rates of infectious diseases, such as tuberculosis, hepatitis and HIV compared to the general population,¹⁴ and mental health issues at greater rates than the general population.¹⁷ Homeless youth were found to have impaired cognitive performance when compared with non-disadvantaged youth²⁰ and school-aged homeless children experience higher rates of mental health/behavioural disorders compared to housed school-aged children.¹⁹ Lastly, while diabetes and hypertension were prevalent among homeless individuals, these prevalence rates did not differ from those of the general population.²⁵

Limitations

The included reviews should not be considered without their limitations. First, homeless populations are likely underrepresented in the published literature. This means that many health issues experienced by homeless populations may have been missed in this evidence brief (e.g., post-natal outcomes for homeless mothers and babies, dental health). Most of the primary studies included in reviews were cross-sectional, so it is not possible to address the extent that associations are causal in nature or the direction of their effects.

Additionally, the prevalence rates varied greatly across studies within reviews. This may be due to the way in which health outcomes were measured, differences in samples, how homelessness was defined and the locations where the studies took place. For example, some reviews included studies with self-reported health outcomes,¹¹ some included studies with validated biological outcomes (e.g., blood tests)²³ while others included a combination of both.^{12,14,18} The definitions of homelessness varied greatly across reviews and the included studies within them. Some studies included very strict definitions of homeless (e.g., only examining individuals who were living on the street),¹⁵ while others used broader definitions (e.g., including both sheltered and unsheltered individuals),¹⁹ making comparisons between studies difficult. In more than half of the included reviews, the majority of the literature was from the US, making it difficult to generalize the findings to other jurisdictions. Additionally, a minority of the included studies compared the prevalence rates to other groups, (such as the general population), making it difficult to interpret the significance of the findings.

The scope of the evidence brief was limited to review-level literature. Subjective outcomes, such as quality of life and self-reported mental health, may exist in published primary studies, but were not part of this literature search. Similarly, specific outcomes of interest to practitioners (e.g., child development outcomes, substance-related outcomes, including overdoses) were not captured in the included review articles, but are issues reflected in current primary and grey literature.^{27,28}

References

1. Gaetz S, Barr C, Friesen A, Harris B, Hill C, Kovacs-Burns K, et al. Canadian definition of homelessness [Internet]. Toronto, ON: Canadian Observatory on Homelessness Press; 2012 [cited 2019 Jan 15]. Available from: <http://homelesshub.ca/sites/default/files/COHhomelessdefinition.pdf>
2. Employment and Social Development Canada. Homelessness partnering strategy: highlights - 2016 Coordinated Point-in-Time Count of homelessness in Canadian communities [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2017 [cited 2019 Jan 15]. Available from: <https://www.canada.ca/content/dam/canada/employment-social-development/programs/communities/homelessness/reports/highlights/PiT-Doc.pdf>
3. Statistics Canada. Data tables, 2016 census: type of collective dwelling (16) and collective dwellings occupied by usual residents and population in collective dwellings (2) of Canada, provinces and territories, 2016 census - 100% data [Internet]. Ottawa, ON: Government of Canada; 2017 May 3 [updated 2018 Jan 17; extracted 2018 Nov 23]. Available from: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/dt-td/Rp-eng.cfm?LANG=E&APATH=3&DETAIL=0&DIM=0&FL=A&FREE=0&GC=0&GID=0&GK=0&GRP=1&PID=109538&PRID=10&PTYPE=109445&S=0&SHOWALL=0&SUB=0&Temporal=2016&THEME=116&VID=0&VNAMEF=&VNAMEF=>. Reproduced and distributed on an "as is" basis with the permission of Statistics Canada.
4. Ontario Ministry of Municipal Affairs and Housing. Homelessness [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [updated 2018 Aug 13; cited 2018 Nov 15]. Available from: <http://www.mah.gov.on.ca/Page126.aspx>
5. Stratford, Perth County & St. Marys Alliance. 2018 homeless enumeration: wrap-up event [Internet]. Stratford, ON: Stratford, Perth County and St. Mary's Alliance; 2018 [cited 2019 Jan 15]. Available from: https://www.stratfordcanada.ca/en/insidacityhall/resources/Social_Services/2018_Homeless_Enumeration/2018-Homeless-Enumeration-Wrap-Up-Event-Presentation.pdf
6. Frankish CJ, Hwang SW, Quantz D. Homelessness and health in Canada: research lessons and priorities. *Can J Public Health*. 2005;96 Suppl 2:S23-9.
7. Salhi BA, White MH, Pitts SR, Wright DW. Homelessness and emergency medicine: a review of the literature. *Acad Emerg Med*. 2017;25(5):577-93.
8. City of Toronto. Deaths of people experiencing homelessness [Internet]. Toronto, ON: City of Toronto; 2018 [cited 2018 Nov 20]. Available from: <https://www.toronto.ca/community-people/health-wellness-care/health-inspections-monitoring/monitoring-deaths-of-homeless-people/>
9. Hwang SW, Wilkins R, Tjepkema M, O'Campo PJ, Dunn JR. Mortality among residents of shelters, rooming houses, and hotels in Canada: 11 year follow-up study. *BMJ*. 2009;339:b4036. Available from: <https://www.bmj.com/content/339/bmj.b4036.long>

10. Health Evidence. Quality assessment tool - review articles [Internet]. Hamilton, ON: Health Evidence; 2016 [cited 2018 Aug 15]. Available from: http://www.healthevidence.org/documents/our-appraisal-tools/QATool&Dictionary_01Jun16.pdf
11. Williams SP, Bryant KL. Sexually transmitted infection prevalence among homeless adults in the U.S.: a systematic literature review. *Sex Transm Dis*. 2018;45(7):494-504.
12. Caccamo A, Kachur R, Williams SP. Narrative review: sexually transmitted diseases and homeless youth--what do we know about sexually transmitted disease prevalence and risk? *Sex Transm Dis*. 2017;44(8):466-76. Available from: https://journals.lww.com/stdjournal/fulltext/2017/08000/Narrative_Review_Sexually_Transmitted_Diseases.4.aspx
13. Medlow S, Klineberg E, Steinbeck K. The health diagnoses of homeless adolescents: a systematic review of the literature. *J Adolesc*. 2014;37(5):531-42.
14. Beijer U, Wolf A, Fazel S. Prevalence of tuberculosis, hepatitis C virus, and HIV in homeless people: a systematic review and meta-analysis. *Lancet Infect Dis*. 2012;12(11):859-70. Available from: [https://doi.org/10.1016/S1473-3099\(12\)70177-9](https://doi.org/10.1016/S1473-3099(12)70177-9)
15. Norena-Herrera C, Rojas CA, Cruz-Jimenez L. HIV prevalence in children and youth living on the street and subject to commercial sexual exploitation: a systematic review. *Cad Saude Publica*. 2016;32(10):e00134315. Available from: <http://ref.scielo.org/m3k7nm>
16. Ecker J, Aubry T, Sylvestre J. A review of the literature on LGBTQ adults who experience homelessness. *J Homosex*. 2017:1-27.
17. Schreiter S, Bempohl F, Krausz M, Leucht S, Rossler W, Schouler-Ocak M, et al. The prevalence of mental illness in homeless people in Germany. *Dtsch Arztebl Int*. 2017;114(40):665-72. Available from: <https://www.aerzteblatt.de/int/archive/article?id=193681>
18. Fazel S, Khosla V, Doll H, Geddes J. The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Med*. 2008;5(12):e225. Available from: <https://doi.org/10.1371/journal.pmed.0050225>
19. Bassuk EL, Richard MK, Tsertsvadze A. The prevalence of mental illness in homeless children: a systematic review and meta-analysis. *J Am Acad Child Adolesc Psychiatry*. 2015;54(2):86-96.e2.
20. Fry CE, Langley K, Shelton KH. A systematic review of cognitive functioning among young people who have experienced homelessness, foster care, or poverty. *Child Neuropsychol*. 2017;23(8):907-34. Available from: <https://doi.org/10.1080/09297049.2016.1207758>
21. Burra TA, Stergiopoulos V, Rourke SB. A systematic review of cognitive deficits in homeless adults: implications for service delivery. *Can J Psychiatry*. 2009;54(2):123-33.

22. Ennis N, Roy S, Topolovec-Vranic J. Memory impairment among people who are homeless: a systematic review. *Memory*. 2015;23(5):695-713.
23. Ijaz S, Jackson J, Thorley H, Porter K, Fleming C, Richards A, et al. Nutritional deficiencies in homeless persons with problematic drinking: a systematic review. *Int J Equity Health*. 2017;16(1):71. Available from: <https://doi.org/10.1186/s12939-017-0564-4>
24. To MJ, Brothers TD, Van Zoost C. Foot conditions among homeless persons: a systematic review. *PLoS One*. 2016;11(12):e0167463. Available from: <https://doi.org/10.1371/journal.pone.0167463>
25. Bernstein RS, Meurer LN, Plumb EJ, Jackson JL. Diabetes and hypertension prevalence in homeless adults in the United States: a systematic review and meta-analysis. *Am J Public Health*. 2015;105(2):e46-60. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318300/>
26. Topolovec-Vranic J, Ennis N, Colantonio A, Cusimano MD, Hwang SW, Kontos P, et al. Traumatic brain injury among people who are homeless: a systematic review. *BMC Public Health*. 2012;12:1059. Available from: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-12-1059>
27. Baggett TP, Chang Y, Singer DE, Porneala BC, Gaeta JM, O'Connell JJ, et al. Tobacco-, alcohol-, and drug-attributable deaths and their contribution to mortality disparities in a cohort of homeless adults in Boston. *Am J Public Health*. 2015;105(6):1189-97. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4431083/>
28. Gulliver-Garcia T. Child & family homelessness: a determinant of children's mental health [Internet]. Toronto, ON: Raising the Roof; 2016 [cited 2019 Jan 15]. Available from: <https://www.raisingtheroof.org/wp-content/uploads/2016/02/CMH-Supplement.pdf>

Specifications and Limitations of Evidence Brief

The purpose of this evidence brief is to investigate a research question in a timely manner to help inform decision making. The evidence brief presents key findings, based on a systematic search of the best available evidence near the time of publication, as well as systematic screening and extraction of the data from that evidence. It does not report the same level of detail as a full systematic review. Every attempt has been made to incorporate the highest level of evidence on the topic. There may be relevant individual studies that are not included; however, it is important to consider at the time of use of this brief whether individual studies would alter the conclusions drawn from the document.

Authors

Erin Berenbaum, Research Coordinator, Health Promotion, Chronic Disease and Injury Prevention; Public Health Ontario

Reviewers

Members of the Ontario Public Health Association (OPHA) Built Environment Working Group

Sue Keller-Olaman, Manager, Health Promotion, Chronic Disease and Injury Prevention; Public Health Ontario

Brent Moloughney, Medical Director, Health Promotion, Chronic Disease and Injury Prevention; Public Health Ontario

Heather Manson, Chief, Health Promotion, Chronic Disease and Injury Prevention; Public Health Ontario

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario), Berenbaum E. Evidence Brief: homelessness and health outcomes: what are the associations? Toronto, ON: Queen's Printer for Ontario; 2019.

ISBN: 978-1-4868-3130-2

©Queen's Printer for Ontario, 2019

Disclaimer

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario's government, public health organizations and health care providers. PHO's work is guided by the current best available evidence at the time of publication. The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use. This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes and/or modifications may be made to this document without express written permission from PHO.

For Further Information

Health Promotion, Chronic Disease and Injury Prevention

Email: hpcdip@oahpp.ca

Public Health Ontario

Public Health Ontario is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit publichealthontario.ca



Public Health Ontario acknowledges the financial support of the Ontario Government.