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Social isolation and loneliness among people living with experience of homelessness: a scoping review

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Abstract

Social isolation and loneliness (SIL) are public health challenges that disproportionally affect individuals who experience structural and socio-economic exclusion. The social and health outcomes of SIL for people with experiences of being unhoused have largely remained unexplored. Yet, there is limited synthesis of literature focused on SIL to appropriately inform policy and targeted social interventions for people with homelessness experience. The aim of this scoping review is to synthesize evidence on SIL among people with lived experience of homelessness and explore how it negatively impacts their wellbeing. We carried out a comprehensive literature search from Medline, Embase, Cochrane Library, PsycINFO, CINAHL, Sociological Abstracts, and Web of Science's Social Sciences Citation Index and Science Citation Index for peer-reviewed studies published between January 1st, 2000 to January 3rd, 2023. Studies went through title, abstract and full-text screening conducted independently by at least two reviewers. Included studies were then analyzed and synthesized to identify the conceptualizations of SIL, measurement tools and approaches, prevalence characterization, and relationship with social and health outcomes. The literature search yielded 5,294 papers after removing duplicate records. Following screening, we retained 27 qualitative studies, 23 quantitative studies and two mixed method studies. SIL was not the primary objective of most of the included articles. The prevalence of SIL among people with homelessness experience varied from 25 to 90% across studies. A range of measurement tools were used to measure SIL making it difficult to compare results across studies. Though the studies reported associations between SIL, health, wellbeing, and substance use, we found substantial gaps in the literature. Most of the quantitative studies were cross-sectional, and only one study used health administrative data to ascertain health outcomes. More studies are needed to better understand SIL among this population and to build evidence for actionable strategies and policies to address its social and health impacts.

Keywords Social isolation and loneliness, Homelessness, Health, Supportive housing, Scoping review

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Introduction

Social isolation and loneliness (SIL) are major social and health issues representing a growing global public health challenge, particularly for socio-economically excluded and underserved populations [1, 2]. Social isolation is defined as a lack of close or meaningful relationships and results from multidimensional experiences associated with exclusion from mainstream society, hopelessness, abandonment, social marginalization, lack of community networks and dissatisfaction with relationships [3, 4]. Loneliness is a more personal and subjective multifaceted experience consisting of different types of self-perceived social deficits, including social loneliness, defined as a self-perceived lack of friendships in either quality or quantity and emotional loneliness, experienced as a deficit of intimate attachments such as familial or romantic relationships or feeling alone and isolated [3–5].

SIL has been linked to putting people at increased risk for adverse health outcomes, social distress and premature death [6]. Lack of adequate social support has been reported to increase the odds of premature death by 50% [6]. Previous studies have also found an association between SIL and increased risk of developing dementia, coronary heart disease and stroke, poorer mental and cognitive health outcomes, and consumption of a low-quality diet [7, 8]. While SIL affects many populations, individuals with experiences of being unhoused are among those with the highest risk of being socially isolated and lonely. First, experiences of homelessness are visible and extreme forms of social exclusion. Unhoused people are more socially disconnected, can feel rejected or abandoned, and may not have appropriate informal (family, relatives, friends) and formal support networks [9, 10]. Second, even after being housed, structural forms of oppression (i.e., racism) and discrimination associated with previous experiences of being unhoused continue to impact individuals' lives and deprive people of meaningful recovery and social integration, connection and relationships [11–13]. Individuals who have experienced homelessness often face persistent stigma and discrimination that can affect their social interactions and access to essential services [12]. People with experiences of being unhoused have self-reported higher odds of poor mental and physical health and loneliness than their housed counterparts [14]. Moreover, people with experiences of being unhoused have lower life expectancy and experience impairments associated with aging earlier compared with people without experiences of being unhoused [15–17]. These factors can make individuals more vulnerable to social and economic abuse, which may affect their ability to build meaningful social connections.

Recent years have seen increased initiatives to address SIL among formerly homeless populations. There is some consensus in social work to consider SIL in needs assessments for health and social care for some specific population groups, such as seniors and youth [18, 19]. More resources are being allocated to address SIL in supportive housing programs and intervention design [20]. Social prescribing, which involves primary care physicians prescribing social activities to patients as a strategy to strengthen social engagement and lower loneliness, is becoming a growing practice [21, 22]. Nonetheless, SIL remains complex to conceptualize, and it has been difficult to measure its prevalence and association with social and health outcomes and other indicators of wellbeing. Without a clear conceptualization and measurement approach, it is uncertain how to design adequate interventions and policies to address SIL.

The aim of this scoping review was to identify, map, and synthesize the findings of qualitative and quantitative studies that measure SIL among people over the age of 18 with lived or living experience of homelessness including those living in supportive or social housing, or staying in emergency or transitional accommodation in order to highlight the gaps in the existing literature and inform the development of future interventions. This scoping review will aim to answer the following questions:

> How are SIL conceptualized across studies involving people with experience of homelessness?
> What scales and tools are used to measure SIL across these studies?
> What is the prevalence of SIL and the relationship between SIL and social and health outcomes in people with experience of homelessness?

Methods

Data sources and searches

The scoping review protocol followed the methodology outlined by Arksey and O'Malley, Levac et al. [18] and is guided by Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA ScR) [23]. Initially, a preliminary search was performed in Medline and Embase to identify any existing scoping reviews related to the topic, and to refine the search strategies by pinpointing key concepts and determining an appropriate timeframe to include relevant studies [24]. Then, comprehensive literature searches were carried out by an information specialist (CZ) in Medline (Ovid platform), Embase (Ovid), Cochrane Central Register of Controlled Trials & Cochrane Database of Systematic Reviews (Ovid), PsycINFO (Ovid), CINAHL (EBSCOhost), Sociological Abstracts (ProQuest), and Web of Science's Social

Sciences Citation Index and Science Citation Index. The search strategies had a broad range of subject headings and keywords, adapted for each database, for the two core concepts of SIL and homelessness or social housing, combined with the Boolean operator AND. The searches were limited to articles in English, French, and Spanish published between January 1st, 2000 to October 27, 2021, followed by an updated search to January 3rd, 2023. The publication languages were chosen for feasibility purpose, considering the linguistic capacity of the research team. Comments, editorials, and letters were excluded from the search. There were a total of 8,398 results from these two rounds of searches prior to de-duplication (7,356 at search one and 1,042 at search two) and the records were compiled in EndNote. The complete search strategies as run are included in the Supplementary material.

Definition and screening process

To refine our screening process, we defined individuals experiencing homelessness as those lacking stable, safe, permanent, and appropriate housing, or the immediate means and ability to acquire such housing [25]. This definition encompasses individuals who are marginally housed or at high risk of eviction, including individuals who are "doubled up," couch surfing, or living in overcrowded conditions [26].

To be considered eligible for inclusion, we established the following inclusion criteria for the scoping review:

- studies had to include participants that were people with homelessness experience or marginally/vulnerably housed populations (people living in supportive housing or shelters). While our screening process did not establish an age criterion, we excluded studies that focused exclusively on minors (under 18 years old) experiencing homelessness. This decision was made as a recent study showed that minors experiencing homelessness might need specific considerations and theoretical framework [27];
- studies had to be peer-reviewed qualitative and quantitative original research papers published in English, French, or Spanish;
- studies had to be published between 2000-and January 3, 2023;
- studies had to examine or include in the analyses: loneliness, social isolation, social disconnection, solitude, social withdrawal, abandonment, lack of contact, social exclusion or rejection.

We excluded papers that were systematic or scoping reviews, and papers where the studied populations was exclusively minors; where the field activities and data were collected from caregivers or other workers, and not people with homelessness experience or marginally/vulnerably housed; studies that only focused on networking, social or community integration and did not refer to social isolation or loneliness. No exclusion was made based on geographic region or countries, however we excluded studies that focused on people residing in camps due to displacement from war, insecurity, or major natural disasters, as these situations are typically addressed by different theoretical and humanitarian frameworks [28].

The results from all searches were imported to Covidence systematic review software, where duplicates were removed. The searches yielded 5,294 papers for screening after the deletion of duplicates. Four researchers (AY, EG, FM, and MP) screened the article titles and abstracts independently and in duplicate in Covidence using the predetermined inclusion and exclusion criteria. The full-text of the articles that met our eligibility criteria were then assessed by two independent reviewers. At both stages, differences in voting were discussed and resolved as a group, and included the Principal Investigator (JL). In total, 52 articles met the criteria for data extraction and analyses. The PRISMA diagram in Fig. 1 shows the flow of information through the different stages of the review.

Data extraction

The main characteristics, research questions, targeted populations, measurement and findings of the selected studies were extracted in an Excel database file by the four researchers (AY, EG, FM, and MP) and reviewed by the Principal Investigator (JL). A summary of each selected paper can be found in Tables 1 and Table 2.

Data synthesis

The studies reviewed exhibited considerable variability in their methodological approaches, participant demographics (including young adults, adults, and seniors) or sex and gender-based groups, measures of SIL, definitions of homelessness experience, and countries where they were conducted. To provide a thorough overview, we examined both quantitative and qualitative research. Initially, we assessed the theoretical frameworks used in these studies to better grasp the conceptualization and ongoing discussions about SIL within the target population. In our analysis of quantitative studies, we identified key similarities and differences in SIL measurements, demographic characteristics, discussions of the prevalence and patterns of SIL and its relationship with health status. To deepen our understanding, we used a crosswalk approach [29] using both quantitative and qualitative studies to examine how participants described,

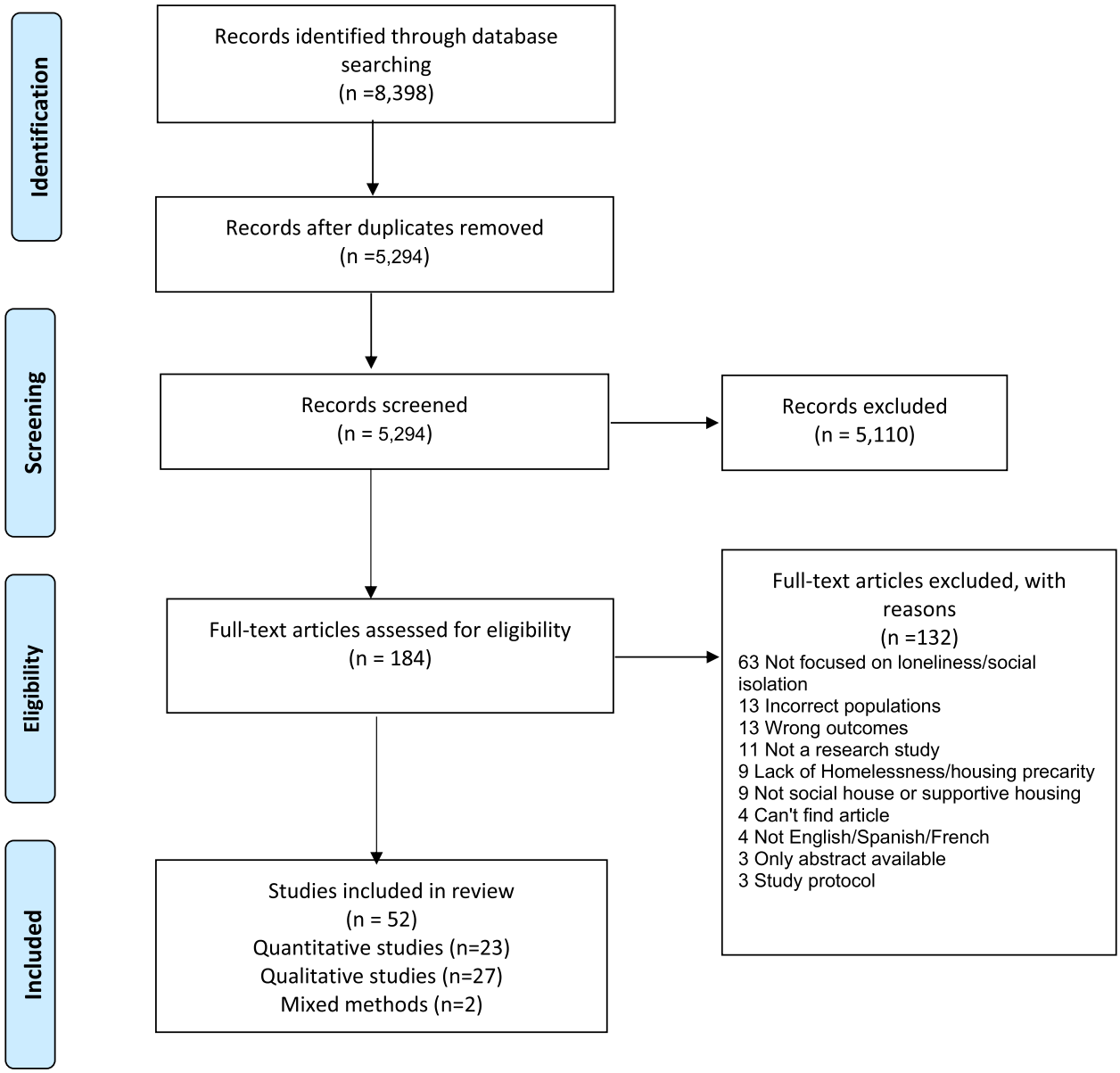

Fig. 1 PRISMA flow diagram

contextualized, and nuanced their experiences of SIL, and how SIL related to demographic factors, gender, and homelessness experience.

Results

Overview of included studies

The main characteristics of the 52 articles included in this review are outlined in Tables 1 and Table 2. Most articles (n = 42) were published from 2010 and later and were conducted in the US (n = 16) and Canada (n = 16). Study methodology was almost evenly split between quantitative (n = 23) and qualitative (n = 27) methods, and a very small number (n = 2) used a mixed methods approach. Among quantitative studies, 18 had a cross-sectional or one-point-in-time design, and 5 used a longitudinal design. Most of the qualitative studies (15) used a thematic analysis approach.

Characteristics of the populations covered in included studies

Among included articles, 4 focused on women [30–33] and older women [34]; 5 studies examined male [35–38] or older male populations [39]. In total, 10 articles focused on older adults, which usually included early aging starting

Table 1 Quantitative studies summary

#	Study title	First author and year	Country where the study is taking place	Study design	Specific objectives of study or research questions	Targeted groups	Participants' characteristics	Measurement tool and scale of social isolation/ lon eliness	Descriptive stats on Social Isolation/ loneliness (if provided)
1	Challenging the exclusion of people with mental illness: the Mental Health Housing and Accommodation Support Initiative (HASI)	Muir et al. (2008) [57]	Australia	Longitudin al	To determine whether HASI (Housing and Accommodation Supportive Initiative (HASI): (1) enables clients with high levels of psychiatric disability to maximize their participation in the community, sustain successful tenancies, and improve their mental health; (2) has appropriate and effective governance arrangements in place to support the establishment and ongoing development of the program; (3) enhances access to specialist and generalist support services including housing, mental health, disability and other human services through processes of partnership and planning	Clients currently active with HASI and with a history of unstable tenancies and psychiatric disability	**Clients interviewed and surveyed.** Phase 1: *n*=71, Phase 2: *n*=79, Phase 3:n *n*=69, Longitudinal (all phases): 55, Total: *n*=85. **Characteristics of clients phases 1-3.** Gender, *n*=110: Male: 67.3%, Female: 32.7%; Age, *n*=106: Under 35 years: 55.7%, 35-39 years: 7.5%, 40+: 36.8%. Birthplace, *n*=110): Australian born: 93.6%, Born overseas and English speaking: 1.8%, Born overseas and nonEnglish speaking: 4.5%; Aboriginal, *n*=109: Aboriginal: 6.4%, Non-Aboriginal: 93.6%	Personal Wellbeing Index: For community participation, longitudinal interviews were used for some factors (work: paid, voluntary, supported or open), education or training, work and/or study), measurement tool not reported for remaining factors (no friends, social and community activities)	Community participation. Entry to HASI: Of the 105 participants where housing data were available, 70% (*n*=74) had maintained their home for 12 months or more. Of the 69 participants who completed all longitudinal interviews, 23% (*n*=16) reported having no friends upon entry into HASI and this decreased to 6% (*n*=4) by the end of the evaluation. While over 70% (*n*=50) reported participating in social and community activities, feelings of loneliness persisted for approximately half of program clients

Table 1 (continued)

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2	The loneliness of youth homeless	Rokach (2006) [47]	Canada	Longitudinal	To examine the experiences of loneliness of homeless youth and young adults compared with the same age groups of non-homeless youth in the general population.	Young and young adults experiencing homelessness, and young and young adults of the general population	*n*=324 participants, 49 homeless youth (average age 17 years), and 64 homeless young adults (aged 25 years), and 79 youth (average age 16.6 years), and 132 young adults (average age 23.7 years) of the general population	Rokach Loneliness Questionnaire	The experience of loneliness was composed of five factors that comprised five subscales on the Rokach comprised five subscales on the Rokach Questionnaire: emotional distress, social inadequacy and alienation, growth and discovery, interpersonal isolation, and selfalienation. In general, homeless youth experience loneliness significantly different than non-homeless youth. Out of the five subscales, homeless youth had higher mean subscale scores on interpersonal isolation (3.43 vs. 2.84) and selfalienation (1.91 vs. 1.48). The interpersonal isolation subscale focused on feelings of alienation, abandonment and rejection which are related to an overall lack of close/ romantic relationships
3	Homeless veterans in the Caribbean: Profile and housing failure	RiveraRivera et al, (2021) [55]	USA	Crosssectional	To evaluate the presence and interaction of sociodemographic, psychosocial, and military characteristics among records of homeless veterans enrolled at the VA Caribbean Healthcare System (VACHS) Homeless Program	Veterans enrolled at the VA Caribbean Healthcare System) Homeless Program	*n*=620 U.S. military veterans with a mean age of 53.5 years (SD: 13.4). Male (92.5%) and served in the US Army (73.8%).	Social Work Behavioral Health Psychosocial Assessment: the relationships section of the questionnair es was used to measure social isolation	34.7% experienced social isolation, legal issues, or difficulty with housing affordability. Participants who reported social isolation had 1.36 (95% CI: 1.05-1.78) increase prevalence for readmission when compared with those who did not report social isolation

Table 1 (continued)

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4	Homeless youth: Coping with loneliness	Rokach (2005) [48]	Canada	Crosssectional	To examine how nonhomeless youth in the general population differ in their ways of coping with loneliness from youth experiencing homeless	Homeless youth and young adults, and nonhomeless youth and young adults in the general population	*n*=324; men=198 (68 homeless, 130 general pop), women=126 (45 homeless, 81 general pop); youth=128 (49 homeless, 79 general pop), young adults=196 (64 homeless, 132 general pop); homeless youth average age=17.02±0.99 years, homeless young adults average age=25.08±3.17 years, general pop youth average age=16.66±1.39, general pop young adults average age=23.76±2.91	Questionnair e was written by the author and derived from Rokach's theoretical model of coping with loneliness (1990). The questionnair e includes 34 items that describe a variety of beneficial coping strategies. Items are divided into 6 factors, with each factor being a subscale in the questionnair e. The subscales are self-development and understanding, social support network, distancing and denial, reflection and acceptance, religion and faith, and increased activity. Participants' scores are the sum of items they endorsed in each subscale	Homeless youth reported a higher mean score on self-development and understanding (10.75 vs 0.36), social support network (2.04 vs 1.85), distancing and denial (1.72 vs 0.69), religion and faith (0.91 vs 0.73) and increased activity (1.26 vs 1.24). Homeless youth had a lower mean subscale score on reflection and acceptance (2.30 vs 2.40). These results suggest that homeless youth cope with loneliness in a different manner than nonhomeless youth
5	Racial differences in the psychosocial response to the COVID-19 pandemic in veterans with psychosis or recent homelessness	Novacek et al. (2022) [54]	USA	Longitudinal	To examine differences by racial identity in the psychosocial response to the pandemic among vulnerable veterans with psychosis and recent history of homelessness and a control group without a history of psychosis and recent history of homelessness	Veterans who identify as Black and veterans who identify as White	*n*=103 Black participants (35 RHV, 40 PSY, 28 CTL) and 98 White participants (31 RHV, 29 PSY, 38 CTL). |Sex M/F Black (27/8 RHV, 37/3PSY, 22/6 CTL) - White veterans Sex M/F (30/1 RHV, 37/3PSY, 34/4 CTL)	The University of California, Los Angeles (UCLA) Loneliness Scale was used to assess subjective feelings of loneliness and social isolation. Measures were collected at two time points: baseline (mid-May 2020 to midAugust 2020) and follow-up (mid-August 2020 to September 2020)	There was no significant relationship between loneliness and race (p=0.254). Recently homeless veterans reported higher levels of loneliness compared to the control group (p=0.001), and loneliness was highest at baseline (p=<0.001)

Table 1 (continued)

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6	The causes of loneliness in homeless youth	Rokach (2005) [49]	Canada	Crosssectional	To examine how youth and young adults in the general population differ in their perception of the causes of their loneliness from that of homeless youth and young adults	Youth and young adults currently experiencing homelessness	Average age of all participants was 21.3 years, with an age range of 15-30 years. Mean number of years of education (i.e., last grade completed), was 12.9 years, with a range of formal education reported to be between 4 and 21 years	Rokach Loneliness Questionnair e. Five factors were considered as the causes of loneliness (Rokach and Brock, 1996), including personalinadequacies, development al deficits, unfulfilling intimate relationships , relocation/ si gnificant separations, social marginality	Homeless youth had higher mean subscale scores in personal inadequacies (1.87 vs 1.48), and significantly higher subscale scores in developmental deficits (2.84 vs 1.20), unfulfilling intimate relationships (1.54 vs 0.80), and social marginality (1.77 vs 0.72). Homeless youth had lower mean subscale scores in relocation/significant separation (1.72 vs 2.68)
7	Risk of mental illhealth among homeless women in Madrid (Spain)	Rodriguez-Moreno et al. (2020) [31]	Spain	Crosssectional	To explore differences between homeless women at high risk of mental illhealth (HW-MI) compared with those who do not present this risk (HWNMI) with regard to various associated variables such as sociodemographic characteristics, living conditions, stressful life events, health, wellbeing, and social support	People experiencing current homelessness, including individuals who had spent the night before being contacted by the interviewer in a shelter for the homeless, on the street or other placed not initially designed for sleeping (cars, underground railway stations, abandoned buildings, etc.)	*n*=120 female participants, 58% were at high risk of mental ill-health. Mean age was 45.52 years (SD=11.38), mainly from Spain (65.2%), 60.8% had kids, 61% were single, and 22.5% had not completed primary education (i.e., 12 years of age);	Question from the General Health Questionnaire (GHQ-28) on (1) feeling lonely or abandoned on a scale from not at all, not much, quite a lot, a lot and (2) Do you have someone to talk to when you feel sad, alone or upset?	HW-MI participants reported feeling significantly lonelier than HW-NMI (d=.56); HW-MI participants also perceived themselves to be significantly unhappier (d=-.58) and reported having significantly fewer people to talk to when they are sad, overwhelmed or upset (OR=.24) than HW-NMI. HW-MI reported poorer living conditions, being more vulnerable and at higher risk of sleeping on the street, and having poorer physical and mental health status than HWNMI

Table 1 (continued)

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8	Stigmatization and Victimization of People Experiencing Homelessness: Psychological Functioning, Social Functioning, and Social Distance as Predictors of Reporting Violence to the Police(1)	Lehmann et al. (2022) [38]	Germany	Crosssectional	To address individual factors relevant in people experiencing homelessness who report their victimization to the police	Currently homeless individuals with history of victimization in last 5 years (*n*=30 participants who reported victimization to police and *n*=30 participants who did not report victimization to the police); compared with sample of currently homeless individuals and a development ssample of people from the general population (*n*=3225)	*n*=60, approximately 52% reported that they were mostly sleeping outdoors and 35% commonly stayed in shelters; participants' range age: 19 to 67 years (mean=43) and all self-identified as male; more than one-quarter (26%) reported completing the equivalent of a US college entry qualification; approximately 57% reported being victims of aggravated assault, 30% of robbery, and 13% of both	UCLA Loneliness Scale (Revised) with 12 items used	Loneliness was measured using the UCLA Loneliness Scale Revised. Participants who did not report victimization to police reported more loneliness (M=1.74, SD=0.73) than those who reported victimization to police (M=1.39, SD=0.70), however the difference was not significant. Participants experienced stronger loneliness in terms of being excluded and emotionally isolated but they did not feel lonely in terms of the quantity of relationships; the interpersonal quality of these relationships was important
9	A biobehavioral framework for examining altered sleep-wake patterns in homeless women	Davis et al. (2000) [32]	USA	Crosssectional	To investigate the selfreported sleep patterns and lifestyle factors associated with sleep in a group of homeless, urban women	Currently homeless defined as person who spent previous night in an emergency shelter, the outdoors, any space note designed for shelter, or a hotel, motel, or home of a relative or friend and was uncertain whether they could continue to live there for at least the next sixty days; and stated that they did not have a permanent house or apartment to which she could go	*n*=50 participants, all women with a mean age of 29.9 years and age range of 18-44 years; 82% not married, 64% Black, 26% Latina, and 10% White; 75% considered themselves to be homeless	Model-based history form to assess participants' needs, with 7 questions specific to sleep, sleep patterns and factors affecting sleep	Loneliness was reported by a significantly greater number of women who also reported restless sleep (77%) vs. restful sleep (45%)

Table 1 (continued)

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10	Experiences with eviction, house foreclosure, and homelessness among COVID-19 infected adults and their relation to mental health in a large U.S. city	Tsai et al. (2022) [67]	USA	Crosssectional	To examine (1) histories of housing instability as evidenced by eviction, house foreclosures, and homelessness; (2) the relation between histories of housing instability and current mental health and substance use during the pandemic	Sample of residents infected with COVID-19 (*n*=3595). Lifetime history of eviction and foreclosure assessed with three response options: been evicted from apartment, experienced foreclosure on a house, and never been evicted or had foreclosure before; lifetime history of homelessness assessed with "in your entire adult lifetime, have you ever been homeless (did not have a stable nighttime residence, such as staying on streets, in shelters, cars etc?; recent housing instability assessed in terms of evictions and late mortgage payments	*n*=2344 female participants and *n*=1238 male participants, most were white, in their late 30s, with at least some college education, employed, with an annual income below $ 60,000, and no psychiatric history; 294 participants (8.18%) reported experiencing homelessness in their lifetime and 34 (0.94%) reported experiencing homelessness in the past month. White non-Hispanic=951 (26.45%); White Hispanic=2003 (55.72%); Black non-Hispanic=297 (8.26%); Black Hispanic=78 (2.17%); Asian/Pacific Islander=100 (2.78%); Native American/Alaskan Native=30 (0.83%); other=136 (3.78%)	UCLA Loneliness Scale (Short Form) with 3 items asking participants on a scale of 1 (Hardly Ever) to 3 (Often) how often they lack companions hip, feel left out and feel isolated from others	Relative importance analysis revealed that measures of loneliness (percentage relative importance=17.12) and severity of substance use (percentage relative importance=16.93) were the most important variables associated with any lifetime eviction and lifetime homelessness
11	Factors associated with cigarette smoking in homeless adults: Findings from an outpatient counseling clinic	Wrucke et al. (2022) [72]	USA	Crosssectional	To investigate factors associated with cigarette use in homeless adults, including whether homeless individuals who smoke demonstrate lower self-efficacy, greater social isolation, poorer perception of therapy, and greater levels of chronic homelessness when compared with homeless individuals who do not smoke	The study population (*n*= 97) consisted of those who reported a history of homelessness	Median age=48.3 years, Male=91, Female=6 Ethnicity: Hispanic=10, NonHispanic=86, Race: Black/African American=45 White/Caucasian=36 Other/no response=16. Some high school or less=23, High school/GED/HSED =35, Technical training/Some college=39. Chronic homelessness=51	Social isolation was measured using the PatientReported Outcomes Measurement Information System (PROMIS) Short Form v2.0 – Social Isolation 4a. This short form was developed for adults and was presented in English. It consists of 4 questions each, with 5 responses ranging from never to always	The mean social isolation score was 56.97, which is higher than the mean of the general US population score of 50. There was no significant relationship between social isolation and smoking status.

Table 1 (continued)

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12	Loneliness in homeless participants of a Housing First program: Outcomes of a Randomized Controlled Trial	Ferreiro et al. (2021) [73]	Spain	Randomized Controlled Trial	To assess feelings of loneliness among Housing First (HF) program participants and Treatment As Usual (TAU)	Currently long-term homeless adults ages 18 or older with mental health and/or substance-use related problems, with ability to function autonomously in everyday life and have or are able to achieve a regular income	46 participants randomized to HF and 41 participants randomized to TAU; 85% of HF participants (*n*=39) and 83% of TAU participants (*n*=34) were male; mean age of HF participants was 50.25 (age range of 21 to 74 years) and mean age of TAU participants was 50.51 (age range of 36 to 80 years); 54% of HF participants (*n*=25) and 34% of TAU participants (*n*=14) were living on the streets prior to study entry; 39% of HF participants (*n*=18) and 49% of TAU participants (*n*=20) had completed less than high school; 70% of HF participants (*n*=32) and 63% of TAU participants (*n*=26) reported a physical comorbidity; 46% of HF participants (*n*=21) and 39% of TAU participants (*n*=26) reported a severe mental illness diagnosis; 47% of HF participants (*n*=17) and 44% of TAU participants (*n*=10) reported current substance use	Camberwell Assessment of Need (CAN) item on company was used to measure loneliness at baseline, 8 and 21 months postbaseline;	There were no significant differences between groups regarding loneliness at baseline (chi-square=0.346, p=0.841), 8 months (chi square=1.352, p=0.509), and 21 months (chisquare=0.366, p=0.833). HF participants reported a higher prevalence of moderate (25%) and serious (25%) problems at 8-months, whereas TAU participants reported a higher prevalence of no problems (61.7%), however differences were not significant

Table 1 (continued)

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13	Immigrant women living homeless in Madrid (Spain)	Vazquez et al. (2020) [30]	Spain	Crosssectional	To examine the differences between women living homeless who came to Spain from other countries and those who were born in Spain	Homeless women/ Immig rant women who are currently homeless	*n*=136: 81 participants were born in Spain and 55 participants were born outside of Spain. For non-immigrant women, average age was 45.5 years (SD=10.47) and marital status was single 60.5% (*n*=49), married 4.9% (*n*=4), For immigrant women, average age was 45.6 years (SD=12.86) and marital status was single 60% (*n*=33), married 7.3% (*n*=4)	Loneliness was measured using one question: the extent to which she felt alone or abandoned	Approximately half of both immigrant (53.8%) and non-immigrant (49.3%) women reported that they felt quite or very lonely or abandoned, with no statistically significant differences between the two groups
14	Associations between deprived life circumstances, well-being and selfrated health in a socially marginalized population	Pedersen, Gronbae k and Curtis (2012) [74]	Denmark	Crosssectional	To examine how the number of disadvantaged life circumstances that socially marginalized people are exposed to, as well as general wellbeing, were associated with poor selfrated health among socially marginalized people	Socially marginalized people using shelters and drop in centres	*n*=1306 with a mean age of 44.2 years for men and 42 years for women. Selfreported mental disorder was reported by 48.9%	One question on social wellbeing and social relations asked participants if they were often unwillingly alone	More than one-quarter (28.4%) reported often unwillingly being alone. Loneliness was associated with higher odds of poor health and mental health among men and women (p=0.069)
15	Physical, psychological, social, and existential symptoms in older homelessexperienced adults: An observational study of the Hope Home Cohort	Patanwal a et al. (2018) [40]	USA	Longitudin al	To determine whether there are associations between sociodemographic characteristics, life conditions, health conditions, health-related behaviors, and other symptom domains, and moderate to severe physical symptoms	Homeless adults aged 50 and older in Oakland, California	*n*=320; mostly men and AfricanAmerican, with a median age of 59 years (age range of 51–82, IQR 55–63).	Three-item Loneliness Scale where a score of 69 indicates loneliness or social symptomatology	Over one-third (*n*=112) met the criteria for loneliness. Participants in the moderate-high physical symptom burden category had a significantly higher loneliness score than participants in the minimal-low physical symptom burden category (p<0.001)

Table 1 (continued)

#	Study title	First author and year	Country where the study is taking place	Study design	Specific objectives of study or research questions	Targeted groups	Participants' characteristics	Measurement tool and scale of social isolation/ lon eliness	Descriptive stats on Social Isolation/ loneliness (if provided)
16	Private lives in public places: Loneliness of the homeless	Rokach (2005) [49]	Canada	Crosssectional	To compare the experience of loneliness of people experiencing homeless to that of the general population	People recruited in centres for the homeless when they dropped in to eat, get a change of clothes or socialize and spend time with others	*n*=288 with a mean age of 33.59 years (age range of 1663) 76% were men and 67% were single	Loneliness Questionnair e-30 developed by Rokach and Brock. The questionnair e includes five factors or subscales: emotional distress, social inadequacy and alienation, growth and discovery, interpersonal isolation and selfalienation	Homeless participants had significantly higher mean subscale scores than non-homeless participants on four of five subscales measuring loneliness: interpersonal isolation (3.44 vs 2.82), self-alienation (1.92 vs 1.27), emotional distress (2.97 vs 2.73), and social inadequacy and alienation (2.92 vs 2.70). Non-homeless participants had a significantly lower mean subscale score on only one of five subscales measuring loneliness: growth and discovery (1.95 vs 2.35)
17	Association between perceived loneliness and Internet use among homeless people	Valerio- Urena, Herrara-Murillo and Rodrigue z-Martinez (2020) [70]	Mexico	Crosssectional	To examine: (1) the level of loneliness perceived by homeless people; (2) the patterns of Internet use among homeless people; and (3) any statistically significant difference between the levels of loneliness perceived by homeless people who are Internet users and those who are not	Currently homeless, attending the public shelter	*n*=129; 96.1% (124/129) were male, 3.9% (5/129) were female; 24.8% (32/129) were young adult (<35 years), 67.4% (87/129) were mature adults (between ages 35 and 60), 7.8% (10/129) were older adult (ages >60); 21.7% (28/129) were non-foreign born and 78.3% (101/129) were foreign-born	De Jong Gierveld Loneliness Scale consisting of 11 items with a rating scale of 0=no solitude to 11=extreme solitude	Participants reported an average score of 7.12, which is close to moderate to severeloneliness (8.0).Younger participants (ages <35) reported higher levels of loneliness (mean score=7.88) compared with older adults (between ages 35-60) (mean score=7.4). Participants who reported being ill had a higher level of loneliness (mean score=7.82) than those who reported being healthy (mean score=6.89)

Table 1 (continued)

#	Study title	First author and year	Country where the study is taking place	Study design	Specific objectives of study or research questions	Targeted groups	Participants' characteristics	Measurement tool and scale of social isolation/ lon eliness	Descriptive stats on Social Isolation/ loneliness (if provided)
18	Homeless Patients in the ICU: An observational propensity-matched cohort study	Bige et al. (2015) [56]	France	Crosssectional	To investigate the association of four social deprivation features (living place, financial resources, health insurance status, and social isolation) with ICU and hospital mortality in a population of homeless and non-homeless adults patients	Homeless and non-homeless patients with hospital admissions	421 homeless (*n*=357 patients) and 9,353 nonhomeless (*n*=8,500 patients)	Review of hospital social department records	Many homeless patients experienced a high degree of social deprivation as measured by no health insurance (50%), social isolation (over 90%), no financial resources (over 50%), and living on the street or other public places (nearly 70%)
19	The social convoys of affordable senior housing residents: Fellow residents and "Time Left"	Drum and Medvene (2017) [66]	USA	Crosssectional	To examine the social convoys of residents of one multiple-unit, single site affordable senior housing property and how they related to their social isolation, loneliness, and subjective health	Residents in affordable seniors housing	*n*=31 with 90% of participants being. Mean age of 78 years	1) The Lubben Social Network Scale (LSNS) -ten items, each of which had a five-point Likert scaletype response option-Three items referred to family networks, three to friend networks and four to confidant relationships , with participant's total adding up to a score between zero and 50. 2) The UCLA-R Loneliness Scale (Russell, 1996) is a version of the UCLA Loneliness Scale adapted for measuring loneliness in elderly populations and is made up of 23 items, which have a fourpoint Likert scale-type of response option. Participants' total score ranged from 20 to 80	Based on LSNS risk categorizations, one in five participants (19.4%) were categorized as being at high risk for social isolation and over one-quarter (25.8%) were categorized as being isolated. There was a negative correlation between subjective health and social isolation (r= -.39, p> 0.03), meaning that healthier participants rated themselves as less isolated. Isolation and loneliness were positively related (r= .51, p> 0.01)

Table 1 (continued)

#	Study title	First author and year	Country where the study is taking place	Study design	Specific objectives of study or research questions	Targeted groups	Participants' characteristics	Measurement tool and scale of social isolation/ lon eliness	Descriptive stats on Social Isolation/ loneliness (if provided)
20	Social isolation schema responds to positive social experiences: lon-gitudinal evidence from vulnerable populations	Cruwys et al. (2014) [71]	Australia	Longitudinal	To investigate whether improve-ments in social isolation schema in group CBT could be accounted for by social identifica-tion with the therapy group	Private hospital patients attending the CBT unit	Time 1: 92 adult out-patients (*n*=25 men and *n*=67 women) who completed group CBT for depres-sion or anxiety (*n*=48 had a diagnosis of depression and *n*=44 had a diag-nosis of anxiety). Mean age of partici-pants was 44.75 years (age range of 18-70 and SD=12.86) Time 2: 76 homeless individuals (*n*=31men and *n*=45 women) with an average age of 34.26 years (age range of 19-56 and SD=9.05). Social isolation schema (T1) mean=1.07 and SD=1.64. Social isolation schema (T2) mean=1.07 and SD=1.72	Social isolation schema was measured using questions such as 'I feel on the outside of groups' rated on a 6point scale from 'Completely untrue of me' to 'Describes me perfectly'	More than one-quarter (28%) reported elevated social isolation at T1, with no change in social isolation reported at T2. Multiple group membership was low and variable at both time points. Multiple group membership at T1 was cor-related with social isolation schema at T1, which means that people who perceived themselves as socially iso-lated also reported fewer group memberships. Social isolation schema at T1 pre-dicted lower social identifi-cation with the homeless-ness services, which means that individuals who had a negative social experi-ence in the homelessness service were less likely to become socially engaged with new groups and this relationship remained over time
21	Finding a spiritual home: A pilot study on the effects of a spirituality retreat and loneliness among urban home-less adults	Ferrari et al. (2015) [69]	USA	Longitudinal	To examine the impact of a week-end religious retreat program on self-reported levels of loneliness and addiction usage among a small sample of adult homeless women and men	Adults experienc-ing homelessness or housing insecurity	*n*=59 selfidentify-ing homeless adults (*n*=35 female and *n*=23 male) recruited from home-less shelters, halfway houses, or housing program sites. The majority of par-ticipants (55.9%) selfidentified as African-American. All participants were over the age of 21 years old, although there was no data collected on their specific age	Revised UCLA Loneliness Scale	Results showed a reduction in mean loneliness scores at baseline and follow-up (6 vs 5.5). Women had significantly higher mean loneliness scores at base-line and follow-up (6.29 and 6) compared with men (5.57 and 4.87).

Table 1 (continued)

#	Study title	First author and year	Country where the study is taking place	Study design	Specific objectives of study or research questions	Targeted groups	Participants' characteristics	Measurement tool and scale of social isolation/ lon eliness	Descriptive stats on Social Isolation/ loneliness (if provided)
22	The lonely and homeless: Causes and consequences	Rokach (2004) [64]	Canada	Crosssectional	To examine how the general population differs in the causes of their loneliness from the homeless	Homeless population and general public	*n*=266 homeless participants with a mean age of 34.37 years and age range between 16 and 83; 67% (*n*=178) were single	Rokach Loneliness Questionnair e: Five subscales: personal inadequacy, development al deficits, unfulfilling intimate relationships,relocation/ si gnificant separations, and social marginality	Participants who were homeless had significantly higher mean subscale scores on all five subscales: personal inadequacy (1.99 vs. 1.60), developmental deficits (2.74 vs. 1.24), unfulfilling intimate relationships (1.53 vs. 1.03), relocation/ significant separations (2.34 vs. 1.62), and social marginality (1.97 vs. 0.56)
23	Predictors of Loneliness among Homeless Individuals in Germany during the COVID-19 Pandemic	Dost et al. (2022) [68]	Germany	Cross sectional	To investigate loneliness and its predictors of loneliness among homeless individuals during a later stage of the pandemic and in other German metropolitan regions	Homeless adults	*n*= 634; mean age= 43.4 years with range of 18 to 80; The mean duration of homelessness was 43 months (SD: 67 months). About half of the participants (51.2%) were born in Germany. Most were single (66.9%), 47.6% had at least one child and 7.9% had a pet.	UCLA Loneliness Scale Version 3, which consists of three items: How often do you feel that you lack companions hip; How often do you feel left out; How often do you feel isolated from others.	Frequency of loneliness was reported by 41.7% of participants (*n*=265). The average loneliness score was 5.2 (SD=1.9); among men, it was 5.1 (SD=1.9) and among women it was 5.4 (SD=2.0). A high frequency of loneliness was reported among middle-aged individuals (40-49 years; 45.6%), individuals born in Germany (47%), individuals who had been homeless for only one month but no longer (57.1%), and individuals who were diagnosed with mental health problems (56.3%). Among men, loneliness was associated with a greater fear of COVID-19 (OR:1.34, 95% CI, 1.06-1.7) and a lower length of homelessness (2-12 months; OR:0.38, 95% CI, 0.16-0.91). Among women, loneliness was associated with older age (40-49 years; OR:37.43, 95% CI, 1.58-885.63), a lower duration of homelessness (2-12 months; OR: 0.02, 95% CI, 0.00-0.26), being born in Germany (OR:8.57, 95% CI, 1.1166.52) and existing mental problems (OR: 5.89, 95% CI, 1.31-26.39).

Table 2 Qualitative and mixed method studies summary

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
1	The supportive network: rural disadvantaged older people and informa- tion and com- municatio n technologies	Baker et al. (2017) [58]	Australia	Qualitative	Homelessness service organiza- tion in rural Victoria	To explore the chal- lenges and oppor- tunities for the use of information and communication technologies by disad- vantaged older people from rural areas	Rural older adults, 50 years or older, and being clients of the Asser- tive Outreach program	*n*=7, 2 (29%) self- identified as female and 5 (71%) selfi- dentified as male, ages 58- 81 *n*=1 female participant completed a high school diploma with the remaining participants com- pleting up to year 8-10	One-on-one interviews	May to Decem- ber 2014	Thematic analysis
2	'The thing that really gets me is the Future': Symptomatolo gy in older homeless adults in the HOPE HOME study	Bazari et al. (2018) [87]	USA	Qualitative	Participants enrolled in HOPE HOME, a longi- tudinal cohort study of older adults experienc- ing homeless- ness	To examine symptom experi- ence among older homeless adults, including impacts on their daily activities and functioning, their personal strengths and management strategies, and their views on symptom etiology	Adults aged 50 and over who were currently homeless	*N*=20, with most (85%) self-iden- tifying as African American, onethird (65%) selfidentified as males Median age of participants was 62 years old, with a range of 52-78	One-on-one semistructured interviews	June 2016 to March 2017	Thematic analysis
3	Finding a place to belong: The role of social inclusion in the lives of homeless men	Bell et al. (2015) [37]	Canada	Qualitative	Inner city home- less shelter	To explore the role of social support in the lives of selfiden- tified male shelter resi- dents in the creation of alternative social worlds whereby they were able to develop meaningful and posi- tive conceptions of self to challenge and over- come the stigma cast on them as a result of their condition of homelessness	Adult selfidenti- fied males currently experiencing homelessness	*n*=10 participants Characteristics not reported	Participant observation and one-on-one semistructured interviews	Not reported	Symbolic interac- tionism

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
4	Australian homeless persons' experiences of social connectedness , isolation and loneliness	Bower et al. (2018) [10]	Australia	Qualitative	Community setting	To explore how participants understand and construct their social networks, including experiences of social isolation and loneliness, within the context of their lives before, during, and where applicable, after homelessness	Currently or formerly homeless adults	*n*=16 participants ages 22-70 years; *n*=6 men, *n*=7 women, *n*=1 intersex and *n*=2 transgender women *n*=11 selfidentified as Anglo-Australian, *n*=1 self-identified as Indigenous Australian, *n*=4 self-identified as other nationalities=4 *n*=11 were currently homeless, *n*=5 were previously homeless (<5 years) and living in public housing History of homelessness ranged from weeks to up to 10 year.	One-on-one semistructured interviews	Not reported	Thematic analysis
5	Finding home after homelessness: older men's experiences in single-site permanent supportive housing	Burns et al. (2020) [39]	Canada	Qualitative	Permanent supportive housing program	To examine: 1) How older men experience home in single-site permanent supportive housing and 2) How are older men's experiences of home affected by the dymamics of social exclusion?	Men living in permanent supportive housing	*N*=10 participants ages 55-77 All participants histories of chronic homelessness	One-on-one semistructured interviews	Not reported	Constructivist grounded theory
6	Ageing in the margins: Expectations of and struggles for 'a good place to grow old' among low-income older Minnesotans	Finlay et al. (2020) [88]	USA	Qualitative	Community setting	To characterize features of built and social environments essential to supporting lowincome aging residents	Adults living in subsidized housing and homeless shelters	*n*=38 participants ages 55-92, of whom *n*=28 (75%) were female Majority of participants were single, never married or widowed *N*=6 (16%) slept in a private or communal room in a homeless shelter	One-on-one semistructured interviews	June to October 2015	Thematic analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
7	'Growing old' in shelters and 'on the street': Experiences of older homeless people	Grenier et al. (2016) [41]	Canada	Qualitative	Community setting	To explore the intersections of aging and homelessness including social relationships, the challenges of living on the streets and in shelters in later life, and the future	Older adults using shelter services	*n*=40 participants with an average age of 58, *n*=29 (73%) selfidentified as male and *n*=11 (27%) selfidentified as female *n*=19 enrolled in the in-house transitional program, *n*=17 staying at emergency shelters, *n*=3 living in subsidized housing linked to a shelter, and *n*=1 housed for a year and continuing to use the cafeteria of a shelter	One-on-one interviews	2014	Guided by a narrative approach and constructivist grounded theory
8	Understanding risk environments in permanent supportive housing for formerly homeless adults	Henwood (2018) [81]	USA	Qualitative	Supportive housing program	To: (1) understand how different types of environments (i.e., physical, social, economic, and policy) interact to produce or reduce substance use risk for newly housed permanent supportive housing; and (2) understand to what extent are permanent supportive housing tenants able to change or negotiate micro- or macro-level factors that influence risk?	Adults aged 39 and over living in a permanent supportive housing program	*n*=23 participants with an average age age of 55.2 (SD=6.6) *n*=16 (59%) participants selfidentified as male, *n*=16 (59%) selfidentified as Black, *n*=23 (85.2%) selfidentified as heterosexual, and *n*=11 (40.7%) were veterans Participants reported 7.7 years (SD=6.2) literally homeless in their lifetime	Ethnographic interviews	Not reported	Thematic analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
9	Enhancing well-being of homeless individuals by building group memberships	Johnstone et al. (2016) [61]	Australia	Mixed methods	Not reported	To better understand the experiences of people who are homeless — their interactions with others in homeless accommodation, as well as their perceptions of the services provided by homeless accommodation staff	People currently residing in temporary or transitional homelessness accomodatio n services run by The Salvation Army	*n*=119 participants completed questionnaire and interview at T1 *n*=56 participants selfidentified as male, *n*=63 participants selfidentified as femaleAverage age was 35.39 years, with a range of 19-59 years (SD=9.34) Average time in accommodation =7.5 weeks *n*=76 participants completed questionnaire and interview at T2Currently in stable or supported accommodation =50%	One-on-one semistructured interviews	Not reported	Thematic analysis
10	Barriers and solutions to Advance Care Planning among homelessexperienced older adults	Kaplan et al. (2020) [76]	USA	Qualitative	Community setting	To identify barriers to and solutions for Advanced Care Planning for homelessexperienced adults aged 50 years or older; Advanced Care Planning is defined as a process that supports adults in understanding and sharing values, goals, and preferences regarding future medical care	Homeless-experienced older adults defined as those with a current or homelessnes s, and clinical stakeholders recent experience of homelessnes s, and clinical stakeholders	*n*=24 homelessness experienced older adults and *n*=20 clinical stakeholders Majority of homelessexperienced older adult participants (70%) selfidentified as Black (70%), 66% were male and 50% were currently homeless Clinical stakeholders were physicians (*n*=5), nurse practitioners (*n*=2), registered nurses (*n*=5), social workers or case managers (*n*=9), administrators (*n*=1), and psychologists (*n*=2)	One-on-one interviews with homelessexperienced older adults and 3 focus groups with clinical stakeholders	October 2016 to April 2017	Thematic and content analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
11	The promise of recovery: Narratives of hope among homeless individuals with mental illness participating in a Housing First randomised controlled trial in Toronto, Canada	Kirst et al. (2014) [78]	Canada	Qualitative	Participants enrolled in AHCS RCT, a longitudinal randomized controlled trial of Housing First in Canada	To explore the role of housing on hopes for recovery among homeless single adults experiencing mental illness enrolled in AHCS RCT in Toronto	Currently homeless, history of chronic homelessness	*n*=60 participants out of a total of 575 participants enrolled in AHCS RCT in Toronto 67% selfidentified as male, 30% selfidentified as female, 2% selfidentified as transgender 55% selfidentified as ethno-racial and 7% selfidentified as Aboriginal Mean age of 41	One-on-one indepth interviews	March 2010 to June 2011	Constant comparative technique derived from grounded theory methods
12	Powerlessness and social disaffiliation in homeless men	Lafuente (2003) [36]	USA	Qualitative	Clinic for the homeless	To explore meanings of powerlessness and socail disaffiliation inhomeless men and the effects of these phenomena on their health	Homeless adult males	*N*=10 participants selfidentified as currently homeless, ages 21-42 years old (mean=31.3 years) *n*=5 (50%) selfidentified as African American and *n*=5 (50%) selfidentified as Caucasian	One-on-one interviews	Not reported	Phenomenological approach

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
13	"You know, we can change the services to suit the circumstances of what is happening in the world": A rapid case study of the COVID-19 response across city centre homelessness and health services in Edinburgh, Scotland	Parkes et al. (2021) [83]	United Kingdom	Qualitative	Community setting	To document the impact of the COVID-19 pandemic on individuals experiencing homelessness, and how services adapted in response were perceived	Persons with lived/living experiences of homelessness, staff within the service sector, and external professionals	*n*=10 persons with lived/living experience, *n*=5 staff within the service sector, *n*=5 external professionals Of those with lived/living experience of homelessness, *n*=2 (20%) were women and *n*=8 (80%) were men; *n*=8 (80%) were vulnerably housed at the time of the interview with *n*=2 (20%) having more housing stability but still requiring support (see Table 1 online not in PDF file, https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-02100508-1/tables/1)	Rapid case study approach	April to August 2020	Analysis was informed by theories of psychologically informed environments and enabling environments

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
14	Social relations and experiences of social isolation among socially marginalized people	Pedersen et al. (2012) [77]	Denmark	Qualitative	11 different shelters and drop-in centres in three Danish cities	To explore the relationship between social relations and social isolation among socially marginalized users of shelters and drop-in centres in Denmark using a typology combining the two concepts.	In Denmark, shelters and drop-in centres provide services not only to homeless people but to a broader spectrum of socially marginalized people such as, among others, substance users, the mentally ill and the poor.	*n*=7 participants self-identified as female and *n*=39 participants selfidentified as male, ranging in age from 22 to 64 Six interviewees were born outside Denmark (in Greenland, Iceland, Germany, Iran or Somalia) All interviewees lived on social security benefits At the time of interview, 32 participants were homeless, of which 29 lived at shelters and 3 lived on the streets.	One-one-one interviews	25 intervie ws from July to September 2008 and 21 intervie ws with new intervie wees from December 2010 and January 2011	Typology analysis
15	Supported housing for adults with psychiatric disabilities: How tenants confront the problem of loneliness	Piat et al. (2018) [80]	Canada	Qualitative	Five supportive housing programs	To examine the experience of loneliness among people with psychiatric disabilities after moving from custodial housing, including group homes, boarding homes, and family- type residences to independent, supported apartments		There were 75 participants across four respondent groups, including tenants (*n*=24), family members (*n*= 15), case managers (*n*=19), and housing staff (*n*=17) Mean age of tenants was 46, with 18 selfidentified as males and 6 self-identified as females	One-on-one semi- structured interview	May 2014 and July 2015	Constructivist approach

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
16	"Halfway independent": Experiences of formerly homeless adults living in permanent supportive housing	Pilla and ParkTaylor (2021) [82]	USA	Qualitative	Permanent supportive housing	To expand our understanding of the lived experiences of formerly homeless adults' adjustment to living in permanent supportive housing, with a focus on: (a) the daily activities they engage in and the meaning derived from those activities; (b) the ways in which they interact with others and the social context of permanent supportive housing; and (c) how living in permanent supportive housing has influenced their meaningful activity and social integration relative to when they were homeless.	Formally homeless adults	*n*=17 (47%) adults living in permanent supportive housing identified as male and *n*=9 (53%) identified as female *n*=7 (41%) participants identified as Black or African American, *n*=7 (41%) as Caucasian, and *n*=3 (18%) as mixed race Participants ranged in age from 42 to 68 years (M=57 years) Participants had lived in permanent supportive housing between 1 and 18 years (M= 7.4) and had previously been homeless for 0.5–40 years (M= 8.7)	One-on-one semistructured interviews	August to October 2020	Phenomenological approach

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
17	Participant perspectives on housing first and recovery: early findings from the At Home/Chez Soi project	Polvere et al. (2013) [62]	Canada	Qualitative	Participants enrolled in AHCS RCT, a longitudinal randomized controlled trial of Housing First in Canada	What do participants' early experiences of receiving housing prior to treatment (the Housing First protocol) reveal about the process of engagement and early recovery?	Transitionin g from homelessnes s to housing	*n*=27 with a median age of 42.5 years *n*=10 (37%) self-identified as female, *n*=9 (30%) selfidentified as Aboriginal, and *n*=3 (11%) selfidentified as Asian *n*=12 (44%) were diagnosed with psychotic disorders and *n*=16 (56%) were diagnosed with depression, bipolar disorder, anxiety disorders, or PTSD *n*=21 (78%) were diagnosed with a substance-abuse disorder at some point in their lives, and *n*=20 (74%) reported using substances within the past 30 days	One-on-one interviews	2010	Thematic analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
18	Friends and pets as compan-ions: strategies for coping with loneliness among homeless youth	Rew (2000) [46]	USA	Qualitative	Community setting	To describe feel-ings of loneliness among homeless ado-lescents and identify strategies for dealing with these feelings	Currently home-less	*N*=32 participants with *n*=18 selfi-dentified as males and *n*=14 self-iden-tified as females, ranged in age from 16 to 23 years, participated in one of four focus groups (with 6-10 participants each); majority (88%) were of European-American descent *n*=10 participants agreed to provide in-depth individual interviews for more detailed informa-tion (sub-sample) and ranged in age from 15 to 23 years; subsample con-sisted of *n*=6 self-identified as males, *n*=3 selfidentified as females, and *n*=1 who selfidentified as both genders, participants in the subsample had experienced homelessness for 1 to 7 years	Focus groups with 32 participant s and onetime individual inter-views with a sub-sample of 10 participant s	Not reported	Manifest and latent content analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
19	The Role of transportation in sustaining and reintegrating formerly homeless clients	Scott et al. (2020) [90]	Canada	Qualitative	People living in affordable housing	To identify the importance of transportation as identified by formerly homeless, at-risk individuals in being able to use services more effectively. To consider the role of transportation in facilitating the reintegration of this group back into a mainstream social activity	Participants had to be living in the same residence for at least six months; aged between 30 and 55 years; had at least one experience of being unsheltered; accommodated in emergency shelters or provisionally housed prior to being housed, and were currently single	*n*=30 participants with *n*=15 selfidentified as males and *n*=15 self-identified as females, with average age of 45.8 years Female participants were younger (41.1 years), on average, than men (47.1 years) and onethird (33%) of participants identified as Aboriginal	One-on-one interviews	July to August 2016	Thematic analysis
20	End-of-life care for homeless people in shelter-based nursing care settings: A retrospective record study	van Dongen et al. (2020) [89]	Netherlands	Mixed methods	Two Dutch shelter-based nursing care settings	To examine the characteristics of homeless people who reside at the end-of-life in shelter-based nursing care settings and the challenges in the end-of-life care provided to them	All persons who were known to have died (either expectedly or unexpectedl y) between 2009 and 2016 and to have resided in one of the shelter-based nursing care settings for at least one night in the three months prior to death	Records of 61 homeless people were included *n*=36 (59%) of these records were derived from one shelter and *n*=25 (41%) from the other *n*=52 (85%) were male (85%), with *n*=34 (56%) had a Dutch cultural background and *n*=17 (28%) had a Surinamese /Antillean cultural background *n*=4 (7%) did not have legal status in the Netherlands	Retrospective record review	September 2016 to February 2017	Thematic analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
21	Supported housing for people with serious mental illness: resident perspectives on housing	Walker and Seasons (2002)	Canada	Qualitative	Supportive housing program	To examine, using a qualitative approach, the overall housing experience of residents in supported housing	Adults living in a supportive housing program	*n*=31 participants with *n*=14 selfidentified as single males and *n*=14 selfidentified as single females and *n*=3 selfidentified as couples Participants' age ranged from 22 to 56, with an average age of 41 years (SD=9.60) *n*=4 single women lived with their children on a day-to-day basis and *n*=2 single women had children who spent a considerable amount of time at their home (e.g., every second weekend)	One-onone semistructured interviews	Not reported	Using the analysis techniques outlined by Rubin and Rubin (1995), three general steps were followed: (a) categorizing interview data according to theme or concept, (b) comparing material within categories to search for variations and nuances in meaning, and (c) comparing across categories to discover integrative themes that demonstrate the relationships between different variables
22	Housing and social connection: Older formerly homeless veterans living in subsidized housing and receiving supportive services	Winer et al. (2021) [53]	USA	Qualitative	Veterans living in HUD-VASH housing in the Greater Boston area, recruited from Project-Based Housing and Tenants-Based Housing	To explore the experiences of social connection among aging veterans with substance use and mental health disorders served at a New England VA medical center (VAMC) living in two different types of supportive housing. The challenges created by substance abuse for social connections and housing retention were also explored	Currently living in either Project Based Housing or Tenantsbased Housing and be 55 years of age or older	*n*=30 participants with a mean age of 63.4 and age range between 56–82 years *n*=25 selfidentified as males and *n*=5 self-identified as females *n*=2 females lived in projectbased housing and *n*=3 females lived in tenantsbased housing	One-on-one interviews	April 2018 to July 2019	Thematic analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
23	Differential impacts of COVID-19 and associated responses on the health, social wellbeing and food security of users of supportive social and health programs during the COVID-19 pandemic: A qualitative study	Mejia-Lancheros et al. (2022) [45]	Canada	Qualitative	Participants enrolled in AHCS RCT, a longitudinal randomize controlled trial of Housing First in Canada	To identify the impacts of the COVID-19 pandemic and associated public health responses on the health and social well-being, and food security of users of Housing First services during the first wave of the COVID-19 pandemic	Housing First participants	*n*=20 participants with *n*=10 selfidentified as females including 1 transgender female and *n*=10 selfidentified as males	One-on-one semistructured interviews	July and October 2020	Thematic analysis
24	"I feel like I'm in a revolving door, and COVID has made it spin a lot faster": The impact of the COVID-19 pandemic on youth experiencing homelessness in Toronto, Canada	Noble et al. (2022) [51]	Canada	Qualitative	Community setting	To assess the impacts of the pandemic on youth experiencing homelessness in Toronto, Ontario, as well as to identify recommendations for future waves of COVID-19	Youth experiencing homelessnes s in Toronto	*n*=45 participants with *n*=34 (76%) self-identified males, *n*=5 (11%) selfidentified female, *n*=4 (9%) selfidentified nonbinary/gender queer, *n*=1 (2%) self-identified transgender male, and *n*=1 (2%) preferred not to answer *n*= 8 (18%) selfidentified as white, *n*=15 (33%) selfidentified as Black, and *n*=4 (9%) selfidentified as First Nations, Metis, Inuit, Indigenous	One-on-one Semistructured interviews	January to March 2021	Inductive thematic analysis

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
25	"It's a place to feel like part of the community": Counterspace, inclusion, and empowerment in a drop-in center for homeless and marginalized women	Toolis et al. (2022) [33]	United States	Qualitative	The Women's Hearth was founded in 1990 as a drop-in center for women experiencing hardship related to poverty, addiction, domestic violence, homelessness and other forms of marginalizatio n	To examine if and how an organizational settings designed to support homeless, lowincome, and other marginalized women facilitates empowering changes and increased wellbeing among the women who participate.	Women engaged in the program (some housing insecure, some renting, some living in subsidized housing)	*n*=22 participants	One-on-one narrative interviews	January 2020	Inductive thematic analysis
26	Lived experiences of homelessness among elderly women: A phenomenological study	Ebied et al. (2021) [34]	Canada	Qualitative	Homeless shelter	To explore the lived experiences of homelessness among elderly women	Formally homeless older adult women eligible for participation if they were 18 years or older, Englishspeaking, and had become homeless within the past six months. We defined homelessness as living in a shelter or unsheltered, and patients were eligible if this was their first episode of homelessness or if they had experienced homelessnes s previously	*n*=30 participants	One-on-one semistructured interviews	Not reported	Phenomenologica l approach informed by Colaizii's method

Table 2 (continued)

#	Study title	First author and year	Country where the study is taking place	Type of study	Setting	Specific objectives of study or research questions	Targeted groups	Participants # and Characteristics	Methods of data collection	Date of collecti on	Methods of analysis
27	Lonely, harassed and abandoned in society: The lived experiences of Iranian homeless youth	Johari et al. (2022) [52]	Iran	Qualitative	Homeless shelters	To explain the lived experiences of young homeless adults aged 18-29 years in southeast Iran	Young absolute homeless adults sleeping in shelters, parks and streets	*n*=13 participants ages 26-38, *n*=5 self-identified as females and *n*=8 self-identified as males, with *n*=5 homeless for less than one year	One-on-one semistructured interviews	July 2019 to November 2020	Conventional qualitative content analysis
28	Understanding loneliness and social exclusion in residential centers for social inclusion	Martinez et al. (2022) [60]	Spain	Qualitative	Five social care centres including residential centres for people in a situation of chronic personal and social deterioration, social inclusion, female victims of domestic abuse and other residence services for women, night shelters and an inclusion programs for people in situations of social exclusion with residential coverage	To examine the relationship of loneliness and social exclusion among people in residential centres	Clients of residential centres for social inclusion designed for individuals with serious personal, social and relationship impairments in situations of exclusion	*n*=11 participants with age ranging from 22 to 60 years (M=43.27) *n*=4 had ever been homeless, *n*=7 were born in Spain and *n*=4were of Moroccan origin *n*=8 had a mental illness diagnosis and *n*=7 had some type of physical illness and/or disability	One-on-one indepth interviews	Summer 2019	Phenomenological approach
29	Social relationships, homelessness, and substance use among emergency department patients	Jurewicz et al. (2022) [59]	United States	qualitative	ED of an urban, public hospital in the northeastern U.S.	To understand what role do social relationships play in precipitating and/or ameliorating homelessness in study participants who use drugs and alcohol. To understand how participants view the connection (if any) between their substance use and their social relationships	ED patients who had recently become homeless	*n*=25 participants with a mean age of 48 (SD=11.5 years) and age range of 20=66 years *n*=23 (92%) self-identified as males and *n*=2 (8%) selfidentified as females *n*=10 (40%) selfidentified as Hispanic/Latino, *n*=7 (28%) selfidentified as White, *n*=8 (30%) selfidentified as Black, and *n*=2 (8%) selfidentified as Asian *n*=8 (32%) were experiencing their first homelessness episode	One-on-one interviews	April 2017 to June 2018	Inductive thematic analysis

from 50 years [40] or 55 years [41] of age and above for populations with experience of homelessness. We found no studies that focused on non-binary groups, though gender-diverse self-identified individuals were included in 6 of the studies [33, 42–46]. Moreover, there were a small number of studies (n = 6) focused on youth. Three of these were quantitative studies [47–49] comparing homeless youth and young adults to youth in the general population. The other 3 were qualitative studies [50–52]; 2 described how youth experience loneliness [51, 52]; one study identified strategies for dealing with feelings of loneliness among homeless adolescents [50]. Three studies [53–55] focused on a population of veterans who were currently experiencing homelessness or were formerly homeless and living in either subsidized or supportive housing. Participants' ethnicity was reported in most of the studies (n = 32).

Social isolation and loneliness as the primary objective

Only 18 of the 52 studies focused on SIL as their primary objective or included SIL in the main research questions. Of these 18 studies, 13 were quantitative and 5 were qualitative as summarized in Tables 1 and 2. In the remaining 34 articles, SIL neither was the main objective nor clearly stated in the objectives or research questions. In those studies, SIL was usually considered as one of the potential explicative or control factors [30, 56, 57], and eventually emerged or co-created from participants' narratives.

Conceptualization of social isolation and loneliness

Different theoretical frameworks were used to contextualize SIL in relation to unhoused or homelessness experiences. For some studies, SIL was embedded in the homelessness experience, since homelessness is in itself a form of social exclusion, which limits people's participation in society [36, 58]. Lafuente et al. [36] explained the experience of unhoused men through the lens of social disaffiliation theory. They explained that situational changes (i.e., loss of employment) or intrinsic factors (voluntary withdrawal) caused participants to become socially disaffiliated. Narratives on isolation from this study revealed feelings of alienation, powerlessness, self-rejection, depression, loneliness and unworthiness. Similarly, the study by Burns et al. [39] explained how the transient nature of being unhoused creates interrelated dimensions of social exclusion, generating a sense of invisibility, identity exclusion, racism, exclusion of social ties and meaningful interactions with the community, thus leading to social isolation.

Bell and Walsh [37] conceptualized SIL among individuals experiencing homelessness as being driven by mainstream normative conceptions of homelessness and the stigma of homelessness. The authors suggest that conceptions of homelessness conflate between notions of "rooflessness" and "rootlessness" which "denotes the absence of support and inclusion in one's community driving experiences of isolation and loneliness." [37].

In the study by Baker et al., [58] SIL is discussed as part of a new landscape of a network society and digital exclusion. The rapid development of information and communication technologies (ICT) has drastically changed human communication and interactions leaving many behind and out of communication flows. The authors explained that aging combined with many social disadvantages like histories of homelessness, multiple complex needs, rural areas of residence, and economically restricted mobility can contribute to creating or keeping affected older adults disconnected and socially isolated.

Meaning and experiences of social exclusion and, in particular SIL were further voiced through semi-structured qualitative interviews or focus groups in different studies. Often, participants reflected on how broader structural stigmatization and alienation associated with housing insecurity contributed to their perceived SIL. Jurewicz et al. [59] highlighted how systemic policies and practices affecting individuals experiencing homelessness who used substances generate and contribute to ongoing experiences of housing precarity, loneliness and isolation. Participants further discussed the complex interrelationship between substance use and homelessness including the strain on social relationships as a result of substance use [59]. Similarly, Martínez et al., [60] described how experiences of loneliness are driven by a lack of meaningful relationships, conflicts with families, a lack of social inclusion, and marginalization faced by individuals residing in a residential center in Gipuzkoa, Spain. In the study by Johnstone et al., [61] social isolation was defined as being associated with not having perceived opportunities to develop multiple group memberships.

Experiences and conceptualizations of loneliness were not strictly dependent upon one's lack of access to housing. Two studies discussed how the transition into supportive or transitional housing further exacerbated experiences of loneliness and isolation [53, 62]. Polvere, Macnaughton and Piat [62] and Winer et al. [53] highlighted that the transition to living within congregate-supported settings or independent apartments can be linked to experiences of SIL even when people are offered social engagement activities. Some participants reported feeling voluntarily isolated as they did not want to engage with others and some participants anticipated social isolation due to transitioning into a new environment.

Measurement tools to assess social isolation and loneliness

There were multiple approaches to measuring SIL across all studies, including widely used and validated multi-item scales and single-item measures. There were three main scales that were developed, revised, tested or used

to measure SIL among people experiencing homelessness: The Rokach Loneliness questionnaire, the UCLA Loneliness Scale and its revised versions, and the De Jong Gierveld Loneliness Scale.

The rokach loneliness questionnaire

Five studies used the Rokach Loneliness Questionnaire [47–49, 63, 64]. The Rokach Loneliness Questionnaire [47, 48] measures causes of loneliness and coping strategies and has been used in studies with young people aged 15–30 in Toronto, Canada. The questionnaire measures the experience of loneliness across five factors, with yes/no items on five subscales: emotional distress such as pain or feelings of hopelessness; social inadequacy and alienation including a sense of detachment; growth and discovery such as feelings of inner strength and self-reliance; interpersonal isolation including alienation or rejection; and self-alienation such as feelings of numbness or denial. The items on the interpersonal isolation subscale relate to an overall lack of close or romantic relationships.

The UCLA loneliness scale

Six of the studies in this review used the UCLA Loneliness Scale or a revised version. Novacek et al. [54] assessed subjective feelings of SIL among Black and White identifying veterans with psychosis and recent homelessness compared with a control group at the onset of the COVID-19 pandemic. The 20-item scale was used to measure subjective feelings of SIL over the past month. Participants rated their experience ranging from "never" to "often," with higher scores indicating higher subjective feelings of loneliness. Lehmann et al. [38] used a revised version of the UCLA Loneliness Scale to examine individual factors including loneliness relevant in people experiencing homelessness to report their victimization to police. The researcher recruited 60 self-identified adult males aged 19 to 67 currently experiencing homelessness in Germany and used a revised and shorter German UCLA Loneliness Scale developed by Bilsky and Hosser [65], to measure loneliness. The scale is composed of 12 items with a 5-point Likert scale ranging from 0 ("not at all") to 5 ("very much") and positively formulated items were recorded to reflect a higher level of loneliness. The load factors for the scale are experiences of general loneliness, emotional loneliness, and inner distance. Drum and Medvene [66] used the UCLA-R Loneliness Scale, which has been adapted for an older adult population to measure loneliness among older adults living in affordable seniors housing in Wichita, Kansas. This version is composed of 23 items, with a four-point Likert scale-type of response options. Participants' total score ranged from 20 to 80, with a higher score representing greater loneliness.

Tsai et al. [67], Dost et al. [68] and Ferrari et al. [69] used a shortened revised version of the UCLA Loneliness Scale Version 3, which consists of three items: "how often they feel they lack companionship, how often they feel left out, and how often they feel isolated from others." Participants self-reported their responses using a 3-point Likert scale ("hardly ever," "some of the time," and "often") to answer questions. A summed score of 3 to 5 is defined as not lonely and a summed score of 6 or more is defined as lonely. The 3-item scale is used widely in research and clinical settings as a short assessment of loneliness.

De Jong Gierveld loneliness scale

Valerio-Urena, Herrara-Murillo and Rodriguez-Martinez [70] examined the association between perceived loneliness and internet use among 129 currently homeless single adults aged 35–60 staying in a public shelter in Monterrey, Mexico. The authors used questions from the De Jong Gierveld Loneliness Scale, which includes 11 items with three response options (1 = no, 2 = more or less, 3 = yes) asking about having friends or people to talk with or contact, feeling empty or missing other people's company, and having people or friends you can trust. The subscales measure emotional loneliness (due to the lack of a close relationship) and social loneliness (due to the lack of a general social network) with scores ranging between 0 (no solitude) and 11 (extreme solitude).

Other social isolation and loneliness scales

Some of the quantitative studies used subscales or single questions from measurement tools that were not primarily designed to measure SIL. For example, Cruwys et al. [71] used the short form of the Young Schema Questionnaire, which included 75 items with five items assessing each of the 15 schemas. This study focused on the social isolation schema, which was described as a "feeling that one is isolated from the rest of the world, different from others, and or/ not part of a group." Statements included "I don't fit in; I don't belong; I'm a loner; I feel outside the groups." Respondents answered on a 6-point scale from 1 if "completely untrue to me" to 6 if "describes me perfectly." In this study, participants who responded with 5 or 6 ("Mostly true of me" or "describes me perfectly") on the scale were assigned 1 point, otherwise they were assigned 0 points.

Wrucke et al. [72] investigated factors associated with cigarette use among people with experiences of homelessness. Social isolation was one of the variables hypothesized to be associated with smoking among this population. The authors used the short form of the social isolation questionnaire developed using the

Patient-Reported Outcomes Measurement Information System (PROMIS). PROMIS defines social isolation as the "perceptions of being avoided, excluded, detached, and disconnected from, or unknown by others." It uses a 4-item social isolation questionnaire to capture each of these dimensions, for which the option of responses range from never to always.

In their study, Drum and Medvene [66] used the Lubben Social Network Scale (LSNS) to measure social isolation in addition to the UCLA-R Loneliness Scale mentioned above. LSNS was used as a measure of risk of isolation and included 10 items; three (3) items referred to family networks, three items (3) to friend networks, and four items (4) to confident relationships. Each of the items had a five-point Likert scale-type response, with the total adding up to a score between 0 and 50. A higher score on the LSNS represents greater risk of social isolation. Participants were categorized based on their LSNS score as low risk (0–20), moderate risk (21–25), high risk (26–30), or isolated (31–50).

Ferreiro et al. [73] used one question from the 22-item Camberwell Assessment of Need (CAN) to measure loneliness among Housing First program participants in Spain. One item asks, "Does the person need help with social contact?" and the answer is classified as a serious problem if a respondent answered, "Frequently feels lonely and isolated." Rodriguez-Moreno [31] used the General Health Questionnaire (GHQ-28) which includes a subscale of somatic symptoms, anxiety and insomnia, social dysfunction and depression to study the mental health risk of women with homelessness experience. The GHQ has one question related to "feeling lonely or abandoned." Similarly, Vazquez et al. [30] reported one question on the extent participants feel lonely or abandoned using a 4-point Likert scale ranging from "not at all" to "a lot." Pedersen, Gronbaek and Curtis [74], Bige et al. [56] and Muir et al. [57] also measured loneliness using one question. Another study by Rivera-Rivera et al. [55] examined factors associated with readmission to a housing program for veterans with a number of measurement tools and administrative data to create a profile of participants. In their study, social isolation was measured using the relationships section of the significant psychosocial problem areas of the Social Work Behavioral Health Psychosocial Assessment Tool where isolation/withdrawal can be measured using "yes" or "no" responses [55]. Finally, Bower [75] piloted the short version of the Social and Emotional Loneliness Scale for Adults (SELSA-S) with a group of 129 Australian adults with homelessness experience. However, this paper was excluded from our review as the authors concluded that the SELSA-S seems to be inappropriate to measure loneliness among people with homelessness experience.

Prevalence and scores of social isolation and loneliness: quantitative evidence

The prevalence of SIL varied from 25% to more than 90% across studies included in this review. Based on LSNS risk categorizations, Drum and Medvene [66] found over one-quarter (25.8%) of participants were categorized as being socially isolated and nearly one in five (19.4%) as being at high risk for social isolation. Cruwys et al. [71], using the Young Schema Questionnaire-2 found more than one-quarter (28%) of participants reported elevated social isolation at time T1 (day 1) of the study, with no change in social isolation reported at time T2 (2 weeks after leaving temporary accommodations). An examination by Rivera et al. [55] of 620 patient records of veterans who requested services at the Homeless Program of the VA Caribbean Healthcare System from 2005 to 2014 found that over one-third (34.7%) reported experiencing social isolation. In a study with 1,306 socially marginalized people recruited at shelters and drop-in centres in Denmark, more than one-quarter (28.4%) reported often unwillingly being alone [74]. Bige et al. [56] found that more than 90% of 421 people experiencing homelessness were socially isolated.

Using the De Jong Gierveld Loneliness Scale, Herrara-Murillo and Rodriguez-Martinez [70] estimated an average score of 7.12 for loneliness among surveyed participants, which is between moderate and severe loneliness (score = 8). Ferrari et al. [69] also found a high mean score among homeless adults (score = 6) at baseline, based on the revised 3-item UCLA scale. Rokach [64] reported homeless adults had significantly higher mean subscale scores than non-homeless adults on four of five subscales measuring loneliness: interpersonal isolation (3.44 vs 2.82), self-alienation (1.92 vs 1.27), emotional distress (2.97 vs 2.73), and social inadequacy and alienation (2.92 vs 2.70).

Social isolation and loneliness evidence in qualitative studies

Twenty-nine studies reported qualitative evidence with the majority (n = 15) using thematic analysis to convey experiences of SIL among participants with histories of being unhoused or experiences of housing precarity. In most qualitative studies, participants referred to a lack of social connectedness, weak relationships with community members, family, or friends, feelings of abandonment, or a desire to withdraw. In a study by Bower, Conroy and Perz [10], researchers explored experiences of social connectedness, isolation and loneliness among 16 homeless or previously homeless adults ages 22–70 in Sydney, Australia. Participants described feelings of rejection through marginalization and stigma, rejection from family, lack of companionship, and shallow and

precarious relationships with others, which made them feel alone [10].

Similarly Burns et al., [39] reported social isolation among older adults with histories of chronic homelessness living at a single-site permanent supportive housing program in Montreal, Canada. Participants revealed that they were socially excluded based on their ethnicity and sexual orientation, which made them feel isolated. Participants in the study by Lafuente [36] attributed their feelings of isolation to experiences of being unhoused and narratives from 10 male-identifying participants centered on discussions of isolation, including feelings of alienation, depression, loneliness, resignation, unworthiness and withdrawal. Participants shared their feelings of being "frightened, sad, lonely, and frustrated" and wanting to "withdraw from society" [36]. Studies by Kaplan et al. [76] and Grenier et al. [41] also reported concerns of social isolation due to lack of strong familial ties among participants, which impacted their engagement with services and contributed to feeling isolated and ostracized.

In a study of 46 adults using shelters and drop-in centres in Denmark, participants reported challenges with developing lasting and meaningful social relationships with others [77]. With data from the 30 participants included in the analysis, the authors categorized SIL into 5 groups: socially related and content (n = 9) characterized by satisfying relations with social and professional groups; satisfied loners (n = 5) centered on social isolation bringing rewards of peace and quiet; socially related but lonely (n = 4) focused on superficial social relations; socially isolated (n = 9) comprised of sporadic social connections; and in-between (n = 3) characterized by broad networks, however feeling unsatisfied with social networks [77].

Other studies focused on experiences of SIL in relation to the negative consequences of being unhoused and experiencing associated stigma. Bell et al. [24] revealed participants' feelings of worthlessness as a result of the social stigma of being unhoused. Participants described homelessness as: "*walking around with a big sign on your head that says, "I'm worthless" … the way you are looked on by society, like you feel like an alien…you always have to leave because you're not welcome, you're not welcome, you're not welcome anywhere. In a town of a million people you are made to feel like you're by yourself and you're alone because there is nowhere to go.*" Another study aimed to understand the experiences of SIL among 11 adults ages 22–60 (5 self-identified females; 6 self-identified males) staying in residential centers in Spain [60]. Participants reported feelings of loneliness as a chronic and persistent experience. One participant described it as follows: *"I've always felt lonely, everywhere I've been, even having people around me…It's not about being physically alone…it's a loneliness inside."* [60].

Nonetheless, transitioning from homelessness to housing does not imply a reduction in SIL, at least in the short term. Several qualitative studies [53, 62, 78–80] were conducted with participants of the At Home / Chez Soi study, a pragmatic randomized controlled trial in Canada that used a Housing First approach to provide housing and supports to individuals experiencing homelessness and mental health problems [11]. Some participants who received housing experienced loneliness [80] whereas others expressed concerns about not being able to cope with social isolation following a transition to independent housing [62]. Moving into housing can contribute to SIL with a shift from being surrounded by people in congregate settings such as shelters or jail, to living alone [78, 33]. One participant said: "*It's [the transition] hard because I'm used to having people around me all the time.*" [62] In a study by Winer et al. [53], some participants who received housing chose not to socialize or build relationships: "*But I don't socialize here at all. I didn't think, I didn't realize that I would be so isolated. You know, I could go knocking on doors and try to be friends with people. But I just don't bother to do that. I'm not interested in reaching out.*"

Other studies examining individuals accessing transitional accommodation reported that participants' positive comments illustrated connections with peers and program staff and these connections resulted in them no longer feeling lonely or isolated [61]. Over one-third (34%) of participants reported positive experiences with respect to their accommodations, interactions with caseworkers and with their peers/other residents, which made them not feel lonely or isolated. Another study [81] found access to supportive housing was also associated with a reduction in drug use; while some participants were spending time alone, they did not report feeling lonely. Some reported having pets and others did volunteer work to help them overcome feelings of social isolation.

Other studies reported SIL among young populations with homelessness experience. A study by Rew [50] conducted interviews and focus groups with 32 homeless youth ages 16–23 participating in a community outreach project in central Texas. Participants discussed reasons for loneliness including personal loss, traveling and being away from family and friends, and at certain times, for example at night, during winter, or specific occasions such as holidays and birthdays: "*I just get lonely at night… more at night.*" [50] Another study by Johari et al [52] conducted interviews and focus groups with 13 individuals ages 18–29 in Iran about their experiences of homelessness. Participants described feeling lonely, harassed

and abandoned by society. Themes that emerged from the interviews included "*avoidance of/ by society, comprehensive harassment, and lack of comprehensive support.*" [52] Participants reported feeling isolated due to a loss of self-confidence and social trust. One participant shared, "*I have nothing to do with anyone, and I am alone.*"

Some qualitative studies reported on SIL among people with experiences of homelessness in the context of COVID-19 [51, 79, 82, 83]. These studies explained how social distancing and other public health restrictions disrupted social relationships with housing staff, other residents, family members and communities and reduced access to services. Participants discussed how an increased fear and a lack of social networks exacerbated feelings of social isolation during lockdown periods: "*Aside from not being allowed to go out the f… door aye. I'm not allowed out. Everybody else can go for a walk, I am imprisoned in the square.*" [83] Another study by Noble et al. [51] analyzed the impact of COVID-19 on 45 youth ages 16–24 living in emergency shelters in Toronto, Canada. Youth stressed that the pandemic and associated public health restrictions (e.g., closed common spaces, canceled in-person activities, social distancing and single-occupancy sleeping arrangements) led to reduced access to important social networks, and an associated increase in feelings of SIL: "*Like, right now, because of everyone's at home, because of the lockdown and you can't really like meet people […] it's a very challenging moment, it's testing me, another limit of me.*" [51].

Intersectionality in homelessness, social isolation and loneliness

Using an intersectionality framework, defined as an approach that explores how various forms of discrimination and privilege overlap and interact to influence an individual's experiences and challenges [84],we analyzed how studies explored the critical role of multiple identities in shaping SIL experiences among people with homelessness experience. People reported different SIL experiences and faced different SIL-related challenges based on their gender [69], ethnicity and sexual orientation [39], and age [48]. For example, Ferrari et al. [69], using the revised 3-item UCLA scale, found women had statistically significant and higher mean loneliness scores (6.29) compared with men (5.57). Using the same scale, Dost et al. [68] reported an average loneliness score of 5.2 (SD = 1.9); among self-identified men it was 5.1 (SD = 1.9) and among self-identified women, it was 5.4 (SD = 2.0) (n = 265 reported frequency of loneliness). Using the De Jong Gierveld Loneliness Scale, Herrara-Murillo and Rodriguez-Martinez [70] found younger participants (< 35 years of age) reported slightly higher levels of loneliness (mean score = 7.88) compared with older adult participants (between 35–60 years of age) (mean score = 7.4). Rokach [47, 48] found homeless youth, compared to young adults, had higher mean subscale scores on interpersonal isolation (3.43 vs. 2.84) and self-alienation (1.91 vs. 1.48).

Other studies among younger populations also described how young people with experiences of being unhoused and coping with SIL are significantly different than their housed counterparts and older adults. Histories of addiction, rejection, trauma, and violence were intertwined with loneliness for young people with experience of homelessness [48, 50–52]. A study by Rokach [48] focusing on the experiences of loneliness among homeless youth in a Canadian urban city found that causes of loneliness included feelings of personal inadequacy, developmental deficits, unfulfilling intimate relationships, relocation, and social marginality, which are unique to these groups of individuals when compared with older adults.

Toolis et al. [33] examined how multi-faceted forms of structural inequities faced by self-identified women experiencing homelessness (i.e., stigmatization, violence, and child apprehension) drive social exclusion experiences from services, peers, and broader society. This study illustrated how organizational settings with a culture of acceptance, support and mutuality can help women develop positive affirming relationships with one another that can alleviate feelings of social isolation. In this analysis, participants highlighted how their transgender identity contributed to experiences of isolation and loneliness and how their experiences were driven by forms of oppression prevalent across social service spaces such as co-ed shelters [33].

Association between SIL and health status or outcomes

Among the quantitative studies, only 8 reported direct associations between SIL and health status or outcomes (See Table 3). All of these studies utilized cross-sectional analyses and only one [56] used health administrative data to ascertain health outcomes. The health status and outcomes examined in these studies varied and included self-rated health [74], subjective health status [66], current cigarette use [72], ICU and hospital mortality [56], physical health burden [40], and risk of mental ill-health [31]. Additionally, some studies also examined social distress indicators such as sleep patterns [85], and experiences with eviction [67] or readmission to housing programs [55].

SIL was significantly associated with physical and mental health outcomes for people with experiences of homelessness. Drum and Medvene [66] found a negative correlation between subjective health and SIL ($r = -0.39$, $p > 0.03$). SIL was associated with higher odds of reporting poor health and mental health among men (OR: 1.98,

Table 3 Studies reporting associations measures between SIL and health status or outcomes

#	Lead author	Study design	Data	Health Indicators	Results
1	Patanwala (2018) [40]	Cross-sectional analysis (within a longitudinal study)	Patient Health Questionnaire–15 (PHQ-15)	Physical symptom burden (dichotomized as: 0–9 (minimal– low) and ≥10 (moderate–high)) (Outcome)	(AOR 2.32, 95% CI 1.26–4.28)
2	Pedersen (2012) [77]	Cross-sectional analysis	Self-reported data	Poor self-rated health (Dichotomized) (Outcome)	Men (OR: 1.98, 95% CI 1.36–2.88)) Women: (OR: 1.71, 95% CI 0.96–3.05))
3	Bige (2015) [56]	Cross-sectional analysis using a Propensity-Matched Cohort Study	Health administrative data	ICU mortality Hospital mortality (Outcome)	ICU mortality: OR (0.56, 95% CI 0.18– 1.89) Hospital mortality: OR: (0.38, 95% CI 0.14– 1.07), p=0.06)
4	Drum (2017) [66]	Cross-sectional analysis	Self-reported data	Subjective health on SIL	Correlation of Isolation and subjective health: (r=-.39, p = .03) Correlation of Isolation and subjective health: (r=-.27, NS)
5	Rodriguez-Moreno (2020) [70]	Cross-sectional analysis	Self-reported data using Short- General Health Questionnaire (GHQ-28)	Risk of mental ill-health measured by the Total Score GHQ-28 (≥7 vs <7) (Outcome)	OR: (0.24, 95% CI 0.09–0.64)
6	Davis (2000) [85]	Cross-sectional analysis	Self-report data on sleep patterns	Type of sleep (restless sleep vs restful sleep) (Outcome)	Chi square test: (restless sleep 77 vs restful sleep 45 among people with loneliness, p<05)
7	Valerio-Urena (2020) [70]	Cross-sectional analysis	Self-report data	Health status (Healthy vs. Sick (Sick=1)) (Explanative variable)	Being sick (OR: Sick 1.228 95%CI 0.524) p<0.05)
8	Wrucke (2022) [72]	Cross-sectional analysis	Self-report	Current Cigarette Use (Outcome	OR: 1.02 95% CI 0.95 – 1.10)

95% CI 1.36–2.88), but not statistically significant for women (OR: 1.71, 95% CI 0.96–3.05) [74]. Another study found participants who reported being sick had a higher level of SIL than those who reported being healthy (OR: Sick 1.228(0.524) $p < 0.05$) [70].

Moreover, a study by Patanwala et al. [40] reported that participants in the moderate-high physical symptom burden category had a significantly higher SIL score than participants in the minimal-low physical symptom burden category (AOR 2.32, 95% CI 1.26–4.28)). In addition, homeless veteran participants who reported SIL were 1.36 more likely (95% CI: 1.04–1.78) to report readmission to the Homeless Program of the VA Caribbean Healthcare System when compared to those who did not report social isolation [55].

Furthermore, people with severe mental health problems are generally at higher risk of being socially isolated or feeling alone. For example, Rodriguez-Moreno [31] compared homeless adult women at high risk of mental-ill health (HW-MI) and homeless women not at high risk of mental-ill health (HW-NMI) and found that HW-MI participants reported feeling significantly lonelier than homeless women without this risk (OR: 0.24, 95% CI 0.09–0.64).

Association between SIL, substance use, and social distress

None of the quantitative studies investigated the association between SIL and substance use, despite the fact that substance use is a prevalent issue among people with homelessness experience. However, some of the qualitative studies discussed how SIL and substance use are interconnected among people with experiences of homelessness [86]. Lafuente [36] reported participants relapsed to alcohol and other risk behaviors due to SIL: "I*'ve started drinking and at this particular time. They offered to put me back into treatment and at this time I was not homeless…and I refuse it…the alcohol has really taken over me.*" Another study discussed how substance use contributed to SIL for participants who identified as male [59]. Participants discussed how the use of substances affected their social relationships in different ways including added strain, limited availability of resources from social relationships, and the interplay

between substance use and feelings of social isolation at earlier and later stages in life [59].

Regarding social distress, Cruwys et al. [71] found that the social isolation schema predicted lower social identification with homelessness services. Individuals with negative experiences with homelessness services were less likely to become socially engaged with new groups, and this relationship remained over time. SIL was also associated with poor or restless sleeping patterns, particularly among women with restless sleep compared to men as reported by Davis et al. [85] Moreover, Tsai et al. [67] found that measures of loneliness (percentage relative importance = 17.12) as measured by the shortened revised version 3 of the UCLA Loneliness Scale and severity of substance use (percentage relative importance = 16.93) were the most important variables associated with any lifetime eviction and lifetime homelessness. Participants also depicted signs of social distress due to SIL, including fear of dying alone. Studies by Bazari et al. [87] and Finlay, Gaugler and Kane [88] highlighted the unique challenges of older adults with homelessness experience, including concerns of dying alone. Van Dongen et al. [89] examined medical and nursing records from 61 adults receiving end-of-life care in shelter-based nursing care settings in the Netherlands and found that one quarter (n = 15) of patients died alone.

Discussion

In this scoping review, we explored social isolation and loneliness (SIL) as an under-researched social determinant of health among individuals with experiences of homelessness or those who are marginally or vulnerably housed. We summarized findings from 52 studies published between 2000 and 2023. Our review detailed how these studies conceptualized SIL, including the scales and tools used for its measurement. We also reported on the prevalence of SIL and examined its associations with well-being, health and social outcomes, and substance use among people with experiences of homelessness.

Most studies included in this review were published in 2010 or later, which shows a growing interest in this area. However, studies that have a specific focus on SIL and associated health and social outcomes continue to be scarce. Only one-third of the studies included in this review identify SIL as their primary goal or one of their main research questions. Most of the quantitative studies used a cross-sectional methodology, and we did not find any intervention studies that addressed SIL among people with histories of homelessness as the primary or secondary outcome. Despite these limitations, the studies summarized in this review provide an important overview of SIL among people with histories of homelessness.

Three main theoretical corpuses were used to conceptualize SIL in the context of housing and homelessness experience across the studies: theory of social exclusion [36, 39, 58], theory of social disaffiliation [36], and theory of digital exclusion (also called digital divide) [90]. Some studies mentioned structural stigma and alienation to explain systematic biases, policies and practices resulting in reinforcing SIL among people with histories of homelessness, particularly among people who use alcohol and other substances [37]. This suggests that SIL is a complex issue, embedded in a larger societal problem of socio-economic exclusion, which makes people who are marginalized by structural systems feel invisible, powerless and detached from society. Moreover, the shift to a more digital world, which requires some digital literacy and access to information and communication technologies, may lead to increased feelings of SIL and barriers to services for people with homelessness experience.

We found that the proportion of studied populations who reported SIL varies largely ranging from 25 to 90% across studies. However, the range of measurement scales used to measure SIL across studies limits consistency and comparability between studies. In addition, there are questions around the suitability and fitness of certain tools for measuring SIL among individuals who have experienced homelessness. For instance, the UCLA Loneliness Scale has been found to be challenging for Australians with cognitive disabilities [91], which is a common issue among some individuals experiencing homelessness [92]. Likewise, some tools focus on a single dimension [93] or use a single question [94], which limits their ability to capture the complex and multifaceted nature of SIL. A study conducted by Bower [75] identified several factors affecting the effectiveness and validity of SIL measures in marginalized groups while using the Social and Emotional Loneliness Scale for Adults (SELSA-S) with 128 homeless adults in Sydney, Australia. These factors included variations in loneliness dimensions (such as social, family, and romantic loneliness), the cognitive abilities of participants to understand and answer questions, and the necessity for cultural adaptation, as meanings can differ across countries and cultures.

Studies included in this review also showed how personal identities play a role in an individual's perception of their experiences of SIL and how it affects them as they navigate health, social and housing services. In one study [33], a participant described how they were rejected from a shelter agency because they identified as transgender. This raises important questions about the inclusivity and equity of service provision and suggests that personal identity can significantly affect one's ability to access essential support. Other studies showed relationships between SIL, age and

self-identifying as a woman. These findings are not only consistent with broader research [95, 96] but also underscore deeper, often systemic issues within social service frameworks [97]. The intersection of SIL with identity-related factors indicates that care and social services may be insufficiently trained and equipped to address the unique challenges faced by different demographic groups [98, 99].

Findings from studies included in this review show a relationship between SIL, health and social distress among people with homelessness experience. SIL was associated with poor sleeping patterns [85], and with lower social identification with homelessness services [71], with any lifetime eviction and lifetime homelessness [67]. Related to health, SIL is negatively associated with subjective health [66], self-reported illness [70], health and mental health among both men and women [74], severe mental health problems [31] and substance use [59]. These findings are in line with what has been reported in studies carried out in other population groups, where an association has been found between SIL and health behavior and physical heath [1, 100, 101] including risk of heart disease, stroke, hospitalization, death and mental health [3, 102, 103, 110, 111].

There are several potential reasons for the relationship between SIL, negative health [6] and desire to participate in social and physical activities [101, 104] or use healthcare services, thereby exacerbating pre-existing conditions or contributing to the emergence of new health problems [105, 106, 109]. For instance, some studies indicate that SIL can lead to reduced participation in social and physical activities, as well as lower utilization of social and healthcare services [43, 107]. This diminished engagement can subsequently heighten the likelihood of developing or worsening mental health issues, such as depression and anxiety [108].

Additionally, individuals with SIL combined with homelessness experience often suffer from a significant loss of self-esteem, self-worth, and self-confidence [36, 52].This situation can be worsened when individuals perceive that their SIL is related to ageism, racial or ethnic background or discrimination based on gender identity or sexual orientation [39]. The interplay of these factors can result in increased social withdrawal, decreased physical activity, and diminished engagement with healthcare services, all of which further elevate the risks for a range of physical and mental health problems [59, 103], including obesity and associated health issues, depression, food and sleeping issues, suicidal ideation and premature deaths [82–84].

Gaps in the existing literature and recommendations

We identified several gaps in the studies included in this review. First, SIL was not the primary objective of the majority of the included studies. Thus, there was limited interest to provide a clear definition of SIL or a detailed description of its measurement. Second, the quantitative studies used different measurement tools, with some of them not primarily conceived to measure SIL, thus making comparisons across studies difficult. Additionally, many of these studies used cross-sectional design and covered very small and not generally representative samples. Thus, the estimation of the prevalence of SIL among people with homelessness experience and living in supportive or social housing remained exploratory, and the studies cannot establish causality between SIL and physical or mental health conditions or with social wellbeing. Studies that are mainly focused on SIL, and more longitudinal and targeted interventions are required to better understand the potential links between SIL and these outcomes. Future studies must also include more specific and objective health outcomes like depression or anxiety disorder, drug and alcohol disorder, service use, suicidal ideation and attempts or premature aging, which are prevalent among people with homelessness experience [86]. Third, the existing literature is very limited in analyzing how SIL impacts some populations differently, in particular women [112, 113] and non-binary or gender-diverse groups [114, 115]. Mayock and Bretherton [116] discussed how gender shapes the trajectories of women experiencing homelessness. Research has demonstrated that women are often affected by and respond to homelessness in different ways than males, and thus have different experiences of homelessness [112]. Self-identified queer people/people who are sexually diverse and/or trans- and gender-diverse and are experiencing homelessness similarly have a distinct experience [114]. Hail-Jares et al. [115] discussed how queer youth experience higher rates of homelessness and greater housing instability compared to their cisgender and heterosexual counterparts. Gender diverse youth who must choose between staying in the family home, maintaining their LGBTQ2S identity, and continuing to be physically and mentally safe, often consider homelessness as the perceived safer option [117]. In addition, future homelessness-related studies examining SIL should seek to make methodological distinctions that reflect differences based on gender identity and not consider queer/gender-diverse people as a homogenous group.

Finally, we found no studies that specifically explored SIL among people with homelessness experience from a particular ethnicity. Given the significant impact of ethnicity on experiences of homelessness, it is likely that ethnicity plays an important role or has a multiplier effect in the way SIL is experienced [118, 119]. There is also a lack of geographic and regional representation across the studies, since most of them were conducted in the

US and Canada. Further, research that includes diverse population and geographic regions would help inform broader policy change and programming for people from different cultural and ethnic groups.

Limitations

This study has some limitations. First, to ensure feasibility, the review exclusively included peer-reviewed articles published in English, French, and Spanish from the year 2000 onwards. This restriction could introduce publication bias and potentially omit relevant studies published in other languages or formats. Second, the review utilized a broad definition of both homelessness experience and health outcomes. This inclusive approach allowed the incorporation of a diverse range of studies from various countries and methodological approaches. However, this broad scope might have introduced heterogeneity that complicates the synthesis of findings. This lack of standardized definitions and measurements makes it challenging to compare and aggregate results across different studies.

Conclusions

Despite these limitations, our scoping review is the first in the literature to provide a deep and nuanced understanding of SIL that accounts for the theoretical conceptualizations, the measurement and complex interplay of identity and systemic barriers among people with homelessness experience. Our review points to the critical need for more research to better understand SIL among different populations experiencing marginalization and to assess the relationship between SIL and health and social outcomes. Testing and validating SIL measurement tools would help to improve the quality of evidence. Additional research with diverse populations and countries is urgently needed, along with interventional studies to build evidence to inform the development of actionable strategies to address SIL among people with homelessness experience. As implications for public policies, these studies highlight that SIL is a prevalent and significant issue in the lives of people with homelessness experience. There is a lack of awareness and training of healthcare providers to recognize and understand SIL as a health risk factor in addition to other challenges for marginalized groups and in particular people with homeliness experience. It is crucial to develop and implement policies to create awareness and best practices that are sensitive to SIL as a growing public health issue and to advocate for systemic changes that address the root causes of discrimination and exclusion, in particular among people with homelessness experience or housing precarity.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

JL had full access to all of the data and takes responsibility for the integrity of the data and the accuracy of the results. JL, AY, and SH conceptualized and designed the review. JL, AY, MF, MP, EG, CZ, CM-L, and SW performed data acquisition, analysis, or interpretation. JL, AY, MF, MP, and EG drafted the manuscript. JL, AY, MF, MP, EG, CZ, CM-L, and SW performed critical revision of the manuscript for important intellectual content. JL, AY, EG, and SH were responsible for administrative, technical, or material support. JL and SH obtained funding.

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Availability of data and materials

All data generated or analysed during this study are included in supplementary information files.

Declarations

Competing interests

The authors declare no competing interests.

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