



# The relationship between housing and asylum seekers' mental health: A systematic review

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## ABSTRACT

Housing is a post-migration risk factor that impacts asylum seekers' health; however, the way in which housing impacts asylum seekers' mental health has not been systematically examined. This systematic literature review identified 21 studies and analysed the data using narrative synthesis. The review found that poor living conditions adversely impact asylum seekers' mental health with some types of housing being more detrimental for mental health than others. Collective housing and detention were identified as particularly harmful for mental health, with detention being highlighted as the worst type of housing associated with the highest levels of self-harm. Private housing and community housing were identified as better alternatives that could improve mental health. Three themes explained why housing impacts asylum seekers' mental health: lack of autonomy, feeling unsafe, and lack of support. Policy implications include the need to safely house all asylum seekers, particularly the most vulnerable asylum seekers. Collective housing and detention should be avoided, as these types of housing harm mental health. Clinical interventions should go beyond psychiatric treatment and target psychosocial wellbeing, addressing issues of social isolation and supporting asylum seekers to manage psychosocial difficulties, including housing problems.

## 1. Background

In a global context of war and instability, more people are seeking asylum. Worldwide, approximately 117.3 million people have been forcibly displaced because of war, violence, persecution, and human rights violations (UNHCR, 2023). This includes 68.3 million internally displaced people, 37.6 million refugees, 5.8 million people in need of international protection, and 6.9 million asylum seekers. An asylum seeker is 'someone who makes a claim to be recognised as a refugee under the Refugee Convention and receive protection and assistance' (Home Office, 2022). Asylum seekers and refugees differ from the wider migrant population and are more vulnerable to developing mental health difficulties (Waterman et al., 2020). Whereas many migrants experience post-migration stressors (e.g. difficulties with housing, employment, and social integration), asylum seekers and refugees are more likely to have experienced severe pre-migration traumas (traumas that occurred in their home country, e.g. war crimes, human rights violations, being physically harmed, witnessing murder) and

peri-migration traumas (traumas during their migration journey, e.g. being threatened, unsafe journeys through dangerous sea or land passage, abuse from traffickers, witnessing violence) (Blackmore et al., 2020). A study on pre-migration trauma and post-migration stress found that 80% of asylum seekers reported exposure to traumas (e.g. having their life threatened, witnessing murders) and 25% had experienced torture (Sinnerbrink et al., 1997). A systematic review and meta-analysis of mental health difficulties in refugees and asylum seekers across 15 countries found that the prevalence of Post-Traumatic Stress Disorder (PTSD) was 31.46%, depression was 31.5%, anxiety disorders was 11%, and psychosis was 1.51% (Blackmore et al., 2020).

Although asylum seekers and refugees are more similar to each other than the wider migrant population, asylum seekers differ from refugees in important ways. Whereas refugees have been legally recognised under the Refugee Convention and have been granted protection in their host country, asylum seekers' claims are still being assessed. Ongoing post-migration stressors for asylum seekers include fear of deportation, family separation, lack of employment, problems with the asylum-

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seeking process, and housing problems (Sinnerbrink et al., 1997; Bernardes et al., 2010; Gleeson et al., 2020). These stressors may increase asylum seekers' vulnerability to developing mental health difficulties. Research comparing refugees and asylum seekers found that asylum seekers have higher levels of anxiety, depression, and PTSD (Toar et al., 2009). Moreover, anxiety prevalence has been shown to be higher for people living in temporary accommodation (Blackmore et al., 2020), which is the type of accommodation in which asylum seekers are housed.

While asylum seekers wait for their asylum claim to be assessed, they live in temporary accommodation provided by their host country. Housing for asylum seekers varies across host countries and includes options such as collective/shared housing (accommodation that is shared by multiple occupants from different families) and private housing (accommodation that is solely for a single person or one family). Housing can be located in the community (known as 'community housing' in which asylum seekers live alongside host country peers) or in centralised accommodation centres designed for asylum seekers (often referred to as 'institutional housing'). In some countries, asylum seekers are housed in refugee camps, hotels, or detention centres. Living conditions for asylum seekers vary across host countries and are often linked to the type of accommodation in which asylum seekers are housed. For example, asylum seekers housed in refugee camps may experience worse living conditions compared to asylum seekers housed in shared rooms in hotels or private studio flats (Pérez-Sales et al., 2022).

Adequate housing is recognised as a human right and is defined as having 'a home, a place which protects privacy, contributes to physical and psychological wellbeing and supports the development and social integration of its inhabitants' (Bonney, 2007, p. 413). Research demonstrates a clear link between housing and health, with poor housing being a post-migration risk factor that impacts health (Nutsch and Bozorgmehr, 2020; Dudek et al., 2022). A systematic review of studies examining the relationship between housing and health for refugees and asylum seekers indicated that housing is directly linked to mental health (Ziersch and Due, 2018). However, the 30 studies included in the review comprised refugee samples or mixed samples of refugees and asylum seekers, and there are fundamental differences between the two groups. As previously described, the differences between refugees and asylum seekers have important mental health implications (Bernardes et al., 2010). Thus, Ziersch & Due (2018) identified an urgent need for a better understanding of the impact of housing on asylum seekers' health. Therefore, this systematic literature review focused on the relationship between housing and asylum seekers' mental health. It also aimed to identify the relevant aspects of housing that impact asylum seekers' mental health.

## 2. Methods

This systematic literature review aimed to identify and critically evaluate all studies relevant to the research question: 'What is the relationship between housing and asylum seeker's mental health?' The secondary question was: 'What are the relevant aspects of housing that impact asylum seekers' mental health?' The review was pre-registered with PROSPERO (ID: CRD42023430982).

### 2.1. Search strategy

A scoping search to identify all studies relevant to the research question was conducted. The following databases were searched: Scopus, Embase, APA PsycNET, PubMed, EBSCO, MEDLINE, CINAHL, Open Dissertations, Cochrane Library, and ETHOS. Studies from published literature and 'grey' literature were considered to fully capture the evidence base and reference lists of identified studies were searched by hand to include articles that may have been missed. Search terms were informed by similar systematic reviews and were structured using the

'SPIDER' criteria (Methley et al., 2014) detailed in Appendix 1. Search terms included 'asylum seeker\*', 'hous\*' or 'accommodation', and 'mental health' or 'mental illness' or 'anxiety' or 'depress\*' or 'ptsd' or 'stress' or 'distress'. Publication dates were limited to 2017 to 2023 to update the findings of a similar systemic review (Ziersch and Due, 2018), which included all studies published prior to 2017.

### 2.2. Study selection

Studies were assessed according to the eligibility criteria in Table 1.

### 2.3. Screening procedure

Search results from different databases were combined and duplicates were removed using Covidence software. Two reviewers (JS, DK) independently screened study titles and abstracts, and studies that did not meet the inclusion criteria were removed. The full text of the remaining articles was then independently assessed for eligibility. The reviewers met to discuss and resolve discrepancies.

### 2.4. Quality assessment

The Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018) was selected to assess the quality of studies because of its capacity to appraise studies with quantitative, qualitative, and mixed method designs. The MMAT was utilised by the first author (JS) to assess study characteristics, such as sample representativeness, appropriateness of measurement used, and completeness of outcome data.

### 2.5. Analytic strategy

Given the heterogeneity of the studies, the authors performed a comprehensive narrative synthesis of the data. According to Popay et al.'s (2006) guidance on conducting narrative synthesis, the authors included three out of the four main elements of narrative synthesis. The fourth element, aimed at developing a theory of how, why and for whom an intervention is effective, is optional and was deemed not relevant for this review. The three elements of narrative synthesis included:

- 1) Developing a preliminary synthesis to organise the findings of the included studies (JS).
- 2) Exploring relationships in the data to consider relationships between studies and factors that could explain differences between studies. Coding and thematic analysis were used to map how the findings of different studies related to one another and to the review question (JS, HW).
- 3) Assessing the robustness of the synthesis by performing a quality assessment of the individual studies and considering the strength of the review (JS, HW).

## 3. Results

Searches identified a total of 1,975 articles. After removing duplicates, 1,776 titles and abstracts were screened against the eligibility

**Table 1**  
Systematic literature review inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
Participants are asylum seekers	Participants are migrants/immigrants. Participants were previously asylum seekers, but are now refugees
Study considers housing	Study does not consider housing
Study considers mental health	Study does not consider mental health
Published between January 2017 and May 2023	Published prior to January 2017 or after May 2023
English language	Non-English language

criteria. Of these, 42 articles were selected for full-text review. Of these studies, 21 met the inclusion criteria and were included in the current review. Fig. 1 shows an overview of the study selection process.

### 3.1. Study characteristics

Of the 21 studies included in the review, 9 used quantitative methods and 12 used qualitative methods. Table 2 provides an overview of the quantitative studies' characteristics and methodology, a summary of the findings, and the main strengths and limitations. Table 3 provides this information for the qualitative studies.

### 3.2. Heterogeneity

Studies were conducted across a range of countries, including Australia (n = 5), the USA (n = 4), Germany (n = 3), Sweden (n = 2), Belgium (n = 2), Greece (n = 2), Norway (n = 1), Mexico (n = 1), and Ireland (n = 1). The studies included different types of housing, including collective/shared housing (n = 13), community housing (n = 8), private housing (n = 7), refugee camps (n = 3), detention centres (on-shore) (n = 3), detention centres (off-shore) (n = 2), and hotels (n = 1). Study sample sizes ranged from 62 to 2,399 participants for the quantitative studies and from 2 to 50 participants for the qualitative studies.

Data collection methods varied depending on the studies' methodology, with quantitative studies drawing data from mental health service outcome measures (n = 4), national surveys (n = 4), and longitudinal projects focused on refugees and asylum seekers (n = 1). Qualitative studies mainly used interviews (n = 12), although ethnography (n = 3) and auto-photography (n = 1) were also employed. When ethnography and auto-photography were used to collect data, they were combined with interviews. Analytic methods similarly varied based on the studies' methodology; they included thematic analysis (n = 6), regression (n = 6), content analysis (n = 3), descriptive statistics analysis (n = 2), bivariate analysis (n = 1), narrative analysis (n = 1), and grounded theory (n = 1). The analytic method in one study was not clearly defined (n = 1).

Seventeen studies' samples were composed solely of asylum seekers; however, four studies had mixed samples. Three studies' mixed samples included both refugees and asylum seekers (Ziersch et al., 2017; Eisen et al., 2021; Dudek et al., 2022); however, findings relevant for asylum seekers could be extracted. One study employed a mixed sample with asylum seekers and staff from the accommodation centre where the asylum seekers were housed (Whitehouse et al., 2021). Although having multiple perspectives enhanced the research findings, insufficient detail was provided about how conflicting views were dealt with when analysing data from the mixed sample.

PRISMA flowchart of the study selection process

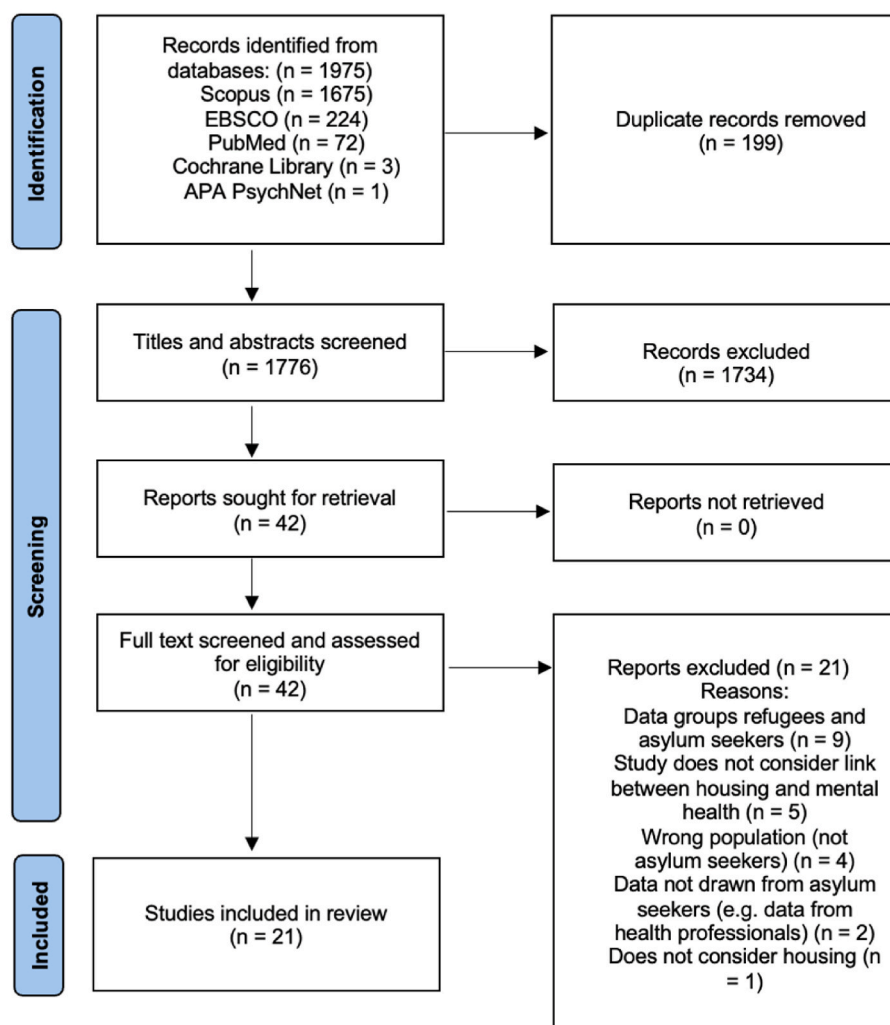


Fig. 1. PRISMA flowchart of the study selection process.

**Table 2**  
Overview of quantitative studies included in the systematic literature review.

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
Whitsett and Sherman (2017)	Do resettlement variables predict psychiatric treatment outcomes in a sample of asylum-seeking survivors of torture?	USA	Collective/shared; Private; Community	Participants: 105 (60% female). Mean age: 34.8 years. Recruitment: participants were patients at a mental health (MH) clinic for torture survivors.	Observational study, cross-sectional. Harvard Trauma Questionnaire (HTQ) and the Hopkins Symptom Checklist (HSCL) measured trauma, anxiety, and depression symptoms. Housing was coded as: 'Unstable and/or overcrowded' or 'Stable and appropriate'. Regression analysis.	Stable, uncrowded housing conditions significantly predicted lower depression, anxiety, and trauma symptoms.	Diverse sample and robust outcome measures to assess MH. However, small sample limits generalisability. Large, diverse sample. However, housing was categorised as 'stable' or 'unstable', which is reductionistic and fails to account for other potentially relevant factors that could impact MH, such as safety and lack of privacy.
Kashyap et al. (2019)	Post-migration treatment targets associated with reductions in depression and PTSD among survivors of torture seeking asylum in the USA	USA	Collective/shared; Private; Community	Participants: 323 (36% female). Mean age: 37.92 years. Recruitment: data drawn from archive database of patients at a treatment centre for torture survivors.	Observational study, longitudinal. Depression (Patient Health Questionnaire-9) and PTSD (Harvard Trauma Questionnaire) were measured after 6 months of treatment. Relationships between pre- and post-migration factors, and changes in symptom levels from intake to 6-month follow-up were evaluated using regression.	Stable housing and employment significantly moderated the relationship between lower chronic pain and reduced PTSD. Neither housing nor employment were directly associated with reduced PTSD or depression severity.	First study to examine incidence of self-harm across entire Australian asylum seeker population by processing arrangements. However, it is likely that rates of self-harm reported understate the incidence of self-harm among asylum seekers, as the data relied on staff formally reporting incidents.
Hedrick et al. (2019)	Self-harm in the Australian asylum seeker population: A national records-based study	Australia	Collective/shared; Community; Detention centre (on shore); Detention centre (offshore)	Participants: 949 self-harm episodes were included in the analyses. Recruitment: all self-harm incidents in asylum seekers recorded as occurring between August 1, 2014 and July 31, 2015 were included.	Observational study, cross-sectional. Staff must report incidents of self-harm in asylum seekers housed in state-provided accommodation. The incidence of self-harm across the asylum seeker population was statistically assessed to determine whether self-harm rates vary by housing arrangements and gender.	Self-harm rates were highest among asylum seekers in detention facilities and lowest among asylum seekers in community-based arrangements. Calculated rates of self-harm among asylum seekers in off-shore detention were 52× higher than the lowest recorded self-harm episode rates for community-based asylum seekers.	Study provides insight into the MH of asylum-seeking children. However, the small and homogenous sample limits the
De Montgomery et al. (2019)	Asylum-seeking parents' reports of health deterioration in their children since fleeing their home country	Greece	Refugee camp	Participants: 143 asylum-seeking parents. Recruitment: data came from the REHEAL general survey for asylum seekers residing in official camps in Greece.	Observational study, cross-sectional. Analysis used descriptive statistics and the calculation of odds ratios through logistic regression. The outcome variable was parents' assessment of whether their children's health had deteriorated since fleeing their home country.	Most parents (56%) described their children's health as having deteriorated to a 'considerable' or 'great' degree. Feeling safe at the current location and access to basic amenities were alleviating factors. Most parents felt 'not very' or 'not at all' safe in their current location.	

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Table 2 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
Hedrick et al. (2020)	Self-harm among asylum seekers in Australian onshore immigration detention: How incidence rates vary by held detention type	Australia	Detention centre (on shore)	Participants: 560 self-harm episodes were included in the analyses. Recruitment: all self-harm incidents in asylum seekers in detention recorded as occurring between August 1, 2014 and July 31, 2015 were included.	Observational study, cross-sectional. A content analysis was conducted of all self-harm incidents reported among asylum seekers in Australian onshore immigration detention according to held detention type, as well as individual facility.	There were a total of 560 self-harm episodes among asylum seekers in Australian onshore immigration detention. Calculated self-harm episode rates were highest among asylum seekers in Immigration Transit Accommodation facilities, Alternative Places of Detention, and Immigration Detention Centres.	possibilities of statistical inference and generalisability. Large sample, which permitted examination of incidence of self-harm by detention type and individual facility. However, it is likely that rates of self-harm reported understate the incidence of self-harm among asylum seekers, as the data relied on staff formally reporting incidents.
Eisen et al. (2021)	The impact of post-migration factors on posttraumatic stress and depressive symptoms among asylum seekers in the United States	USA	Collective/shared; Private; Community	Participants: 78 (58% female). Mean age: 34.1 years. Recruitment: data came from archived records at an agency that provides psychological and case-management services for asylum seekers.	Observational study, longitudinal. Quality of Life/Functioning Progress Scale for Asylees/Asylum Seekers (QOLS) provided information about quality of life domains, including housing, employment, and asylum status. The Harvard Trauma Questionnaire and The Hopkins Symptom Checklist measured PTSD, anxiety and depression. Data collected upon entry to the agency and at second point of measurement (timing varied for different participants). Multiple regression analysis.	Changes in housing status were not associated with a change in PTSD symptom levels ( $p = .236$ ) or a change in depressive symptom levels ( $p = .318$ ).	Longitudinal study. However, sample included refugees granted status during the study, which could have impacted MH. It is also possible that the study was not sufficiently powered and with more participants a significant effect would have been detected.
Dudek et al. (2022)	Association between housing and health of refugees and asylum seekers in Germany: explorative cluster and mixed model analysis	Germany	Collective/shared; Private; Community	Participants: 1535 (37% female). Mean age: 36 years. Recruitment: data came from the IAB-BAMF-SOEP Survey of Refugees.	Observational study, cross-sectional. Cluster analysis of population-based, cross-sectional secondary data identified clusters of refugee accommodation. Health disparities were assessed across clusters by performing bivariate analysis and linear mixed model regression analysis. Main outcome variables were the MH component score and the physical health component score.	Compared to private housing, collective housing was significantly associated with poorer MH. Collective housing sheltered more asylum seekers and differed from private housing regarding space, area, level of restrictions, neighbourhood safety, social connections to other asylum seekers and neighbourhood locals, and respondent satisfaction. Collective housing residents spent more time in boredom and had the lowest satisfaction and belonging scores.	Large sample size. Differentiated between collective and private housing and demonstrates how different kinds of housing impact asylum seekers' MH.

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Table 2 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
Martino et al. (2022)	Between liminality and a new life in Australia: What is the effect of precarious housing on the MH of humanitarian migrants?	Australia	Private	Participants: 2399 humanitarian migrants. The comparative Australian population included 21,462 respondents. Recruitment: data came from Building a New Life in Australia (BNLA) survey and comparative data came from Household, Income and Labour Dynamics in Australian (HILDA) survey.	Observational, cross-sectional. The effect of precarious housing on humanitarian migrants' MH was compared to the greater Australian population. In the BNLA, the Kessler Psychological Distress Scale (K6) measured mental distress. The Kessler Psychological Distress Scale (K10) was collected in the HILDA. Fixed effects regression analyses were used to model the relationship between each exposure measure of precarious housing (housing affordability, housing suitability, and housing security) and MH (K6 or K10).	Modelling revealed a negative MH effect attributed to unaffordable and unsuitable housing for both humanitarian migrants and the Australian population, with humanitarian migrants at greater risk of poor MH due to unsuitable housing. Humanitarian migrants were 60 % more likely to suffer from worse MH when they experience unaffordable housing compared to their counterparts in affordable housing, with a 2.4× increased risk for those in unsuitable housing.	However, cross-sectional design of the study does not allow conclusions on causality of the associations identified. Large sample and regression accounted for potential confounding factors. However, variables were based on self-report questionnaires, which are vulnerable to bias. Access to more objective housing and financial data would have strengthened the study.
Amarasena et al. (2023)	Offshore detention: cross-sectional analysis of the health of children and young people seeking asylum in Australia	Australia	Detention centre (offshore)	Participants: 62 children and young people (CYP) who were in offshore immigration detention between 2013 and 2019. Recruitment: clinicians enrolled eligible CYP into the study with caregiver consent.	Observational study, cross-sectional. CYP health outcomes were categorised as physical, mental or neurodevelopmental conditions. Risk and protective factor data were collected using the adverse childhood experiences (ACE) and refugee-specific adverse childhood experiences (R-ACE) tools. Descriptive statistics described absolute and relative frequencies. Categorical variables were analysed using the Pearson's $\chi^2$ test or Fisher's exact test.	Physical and MH concerns were found in almost all asylum-seeking CYP (89% and 79% respectively) subjected to offshore immigration detention. Most frequent symptoms were low mood (47%) and sleep difficulties (47%). Most diagnosed MH conditions were pervasive refusal syndrome (15%), post-traumatic stress disorder (13%) and depression (13%). Almost half had suicidal ideation/attempt or self-harm (45%). MH concerns were more likely in CYP held in detention for $\geq 1$ year ( $p = 0.01$ ).	Study highlights the impact of detention on CYP's MH. However, small sample made multivariable regression analysis unstable. Restricted access to CYP's health status prior to the period they were held in detention resulted in limited comparative data.

**Table 3**  
Overview of qualitative studies included in the systematic literature review.

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
Ziersch et al. (2017)	Exploring the relationship between housing and health for refugees and asylum seekers in South Australia: A qualitative study	Australia	Collective/ shared; Private; Community	Participants: 50 (20% female). Recruitment: over 400 asylum seekers and refugees were surveyed as part of a larger study, then participants were invited for interviews.	Interviews thematically analysed using the framework approach.	Housing impacted MH through a range of pathways including the suitability of housing in relation to physical elements, social aspects, and security of tenure. There was a perceived difficulty in addressing housing concerns, which contributed towards a sense of lack of control and contributed to MH difficulties. Overcrowded shared housing negatively impacted MH, particularly for single male asylum seekers due to lack of space, privacy, and incompatibility with housemates. Housing that was clean and in good condition positively impacted MH. Some participants said relocating to more suitable housing provided relief from depression.	Mixed sample included refugees and asylum seekers; however, the results specified findings relevant for asylum seekers. All asylum-seeking participants came from the Middle East, which limits generalisability.
Gewalt et al. (2018)	Psychosocial health of asylum-seeking women living in state-provided accommodation in Germany during pregnancy and early motherhood: A case study exploring the role of social determinants of health	Germany	Collective/ shared	Participants: 9 female asylum seekers were interviewed during pregnancy and early motherhood. Recruitment: participants were recruited during midwifery consultations at two reception centres.	21 semi-structured interviews conducted with 9 women. Inductive approach to thematic analysis.	1) Psycho-social stressors: minimal ability to influence their living situation caused psychological stress. 2) Stressful living circumstances: lack of self-determination and privacy, verbal and physical threats, experiences of powerlessness, and disturbances by other residents. 3) Social support: building social support proved difficult because of short stays in reception centres, frequency of transfers between accommodations, and many nationalities and language barriers. Participants described feeling isolated. Coping with psychosocial stressors was easier with support from peers or professionals. 4) Coping styles: included acceptance of the current circumstances, faith, and hope for an improvement of their situation in the future.	Match between the WHO's Conceptual Framework for Action on the Social Determinants of Health and the data lends credibility to the findings. However, small sample from one state in Southern Germany limits generalisability.
Gewalt et al. (2019)	"If you can, change this system" -Pregnant asylum seekers' perceptions on social determinants and material circumstances	Germany	Collective/ shared	Participants: 9 female asylum seekers were interviewed during pregnancy and early motherhood. Recruitment:	21 semi-structured interviews conducted with 9 women. Inductive approach to thematic analysis.	1) Housing quality: wellbeing was negatively impacted by poor housing quality. 2) Neighbourhood quality: lack of privacy,	Match between the WHO's Conceptual Framework for Action on the Social Determinants of Health and the data lends

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Table 3 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
	affecting their health whilst living in state-provided accommodation in Germany - A prospective, qualitative case study			participants were recruited during midwifery consultations at two reception centres.		inability to lock rooms, and sharing with unknown and aggressive people caused anxiety. 3) Consumption potential: accommodation regulations, including insufficient financial allowances and not being allowed to cook for themselves, were viewed as restrictive and contributed to lack of autonomy. 4) Nutrition: catered food was perceived as unsatisfactory. Participants reported loss of appetite due to bland food, limited variety and choice, and unfamiliar tastes. 5) Physical activity: lack of opportunity for physical activities caused concern for their health and wellbeing and for that of their unborn child.	credibility to the findings. However, small sample from one state in Southern Germany limits generalisability.
Murphy et al. (2018)	Erosion of meaning in life: African asylum seekers' experiences of seeking asylum in Ireland	Ireland	Collective/shared; Hotel	Participants: 16 African asylum seekers (56% female). Recruitment: participants were recruited from two MH services.	Narrative study. Holistic-content approach for data analysis.	Participants described a diminishment of components required to achieve meaning in life while seeking asylum. 1) Diminishment of efficacy: rules imposed reduced self-efficacy. Participants compared their accommodation to a prison due to their behaviour/choices being controlled (e.g. having to sign in and out, activities being prescribed, decisions made for them about what to eat and when to eat it). 2) Diminishment of purpose: unable to work, study, or fully parent their children. 3) Diminishment of self-worth and value. 4) Diminishment of love and sense of belonging.	Findings are useful for considering what therapeutic interventions are needed post-migration. However, small, homogenous sample limits generalisability.
Moreira et al. (2020)	Lives on hold: The experiences of asylum seekers in Moria refugee camp	Greece	Refugee camp	Participants: 15 (20% female). Mean age: 28 years. Recruitment: Kara Tepe refugee camp residents were invited to participate.	Thematic analysis of interviews. Researchers completed field observations in two refugee camps.	1) Divisions within the camps: people with different nationalities and cultures were forced to live together, causing conflict and aggression. 2) Sense of safety and security: participants felt insecure in the camp. 3) Living conditions: poor living conditions include overcrowding, poor nutrition and food quality, and insufficient housing conditions (cold, absence of beds, loud noises). 4) Psychological and physical distress: poor	Combination of interviews with participants and researcher observations lends credibility to the findings. However, small sample limits generalisability.

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Table 3 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
Lietaert et al. (2020)	Families on hold: How the context of an asylum centre affects parenting experiences	Belgium	Collective/shared	Participants: 9 asylum-seeking parents. Recruitment: participants living in an asylum centre were selected through their participation in parent psychoeducation sessions.	Researchers observed psychoeducation sessions and completed interviews. Qualitative content analysis.	living conditions caused sadness, fear, insomnia, and uncertainty. 1) Limited parental agency: parents needed to ask and be given permission for many things, including care for their children. 2) Timetables, use of time, and temporality: asylum centre rules and strict timings (e.g. canteen hours) prevented parents from responding to their children's needs. 3) Condition of the building: the state of the building, including dirty showers and toilets, caused stress. 4) Allocation of space: lack of space for family life. Everything was witnessed by children, including inappropriate things. 5) Parents felt powerless in protecting their children from dangers, including other residents who displayed aggression and physical and sexual violence towards their children.	Combining interviews and observations enriched the dataset. However, small sample limits generalisability.
Whitehouse et al. (2021)	A qualitative exploration of post-migration stressors and psychosocial well-being in two asylum reception centres in Belgium	Belgium	Collective/shared	Participants: 41, including 29 asylum seekers and 12 reception centre staff. Recruitment: participants were recruited from two reception centres.	Thematic analysis of interviews.	1) Poor living conditions: lack of privacy, overcrowding, lack of cooking facilities, unpalatable food, and conflict when sharing rooms caused stress. 2) Lack of engagement, integration and autonomy: barriers prevented engagement in education/work, causing asylum seekers to become bored and frustrated. Participants felt like 'prisoners' or 'children.' Coping strategies included keeping active, spending time outside the centre, helping others, and integration within the community. 3) Inadequate capacity and resources to provide psychosocial support: poor communication between staff and asylum seekers. Asylum seekers reported insensitivity to their needs.	Study was enhanced by including both asylum seeker and staff perspectives; however, it was unclear how conflicting views were dealt with when analysing the data.
Hedstrom et al. (2021)	Exploring parenting narratives in asylum seeking populations in Sweden: Examining the effect of post-migration stress on families	Sweden	Private; Community	Participants: 17 asylum-seeking parents. Recruitment: participants attended a local day care setting open to children 0–5 years.	Interviews analysed using grounded theory.	1) Lack of agency: parents felt a lack of agency over their life choices. 2) A new normal: the structure of day-to-day life was linked to lack of	Theoretical sampling allowed researchers to gain feedback from participants regarding constructed categories. Homogenous sample limits generalisability.

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Table 3 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
	through grounded theory					agency. Families were unable to choose where they lived, when and what they ate, there were significant financial constraints, as well as restrictions on work/study. 3) Poor physical and MH: participants spoke of sleep problems, feeling tired, crying, and feeling isolated, suggesting feelings of depression. Parents tried to shield children from distress by not talking openly in front of them; however, this negatively impacted parents' wellbeing. Parents described symptoms of anxiety and worry in their children.	
Grønseth and Thorshaug (2022)	Struggling for home where home is not meant to be: A study of asylum seekers in reception centres in Norway	Norway	Collective/shared; Community	Participants: 2. 'Sara', age 20, from Ethiopia and 'Abel,' age early twenties, from East-Africa. Recruitment: researchers conducted ethnographic fieldwork at an asylum centre and invited participants to an interview and auto-photography.	Data from ethnography, interviews, and auto-photography.	Pictures demonstrate the smallness and messiness of participants' rooms, where items of clothing, food, and furniture are cluttered. There is little space left for activities, meals, or visitors. Pictures could be seen as representing an existential and emotional worry, a longing and struggle for home in a physical, emotional and existential sense, while they are confined to material structures that challenge their hopes and struggles for home and fight for self. Lack of social interaction with others underlines an existential emptiness and the struggle of making a home for themselves at the reception centres. Asylum seekers nevertheless negotiate the centre as home by engaging with things, memories, images, and persons that provide meaning.	Auto-photography combined with interviews and observation enriched the data. However, data analysis was unclear, and it was unknown what data came from researcher observations and what data came from asylum seekers' words and photographs.
Domínguez et al. (2022)	"They treat us like we are not human": Asylum seekers and "la migra's" violence	USA	Detention centre (on shore)	Participants: 7 Latinx asylum seekers (43% female). Mean age: 29 years. Recruitment: asylum seekers in detention centres were invited to participate.	Testimonio research, which allows participants to document their experiences with oppression. Thematic analysis.	1) No compassion. 2) Detention violence: included physical violence, ethnoracial violence, psychological violence, and violence against children. 3) Post-detention trauma and health concerns: included nightmares, disrupted sleep, depression, "el llanto" [weeping], intrusive thoughts, flashbacks, avoidance of internal reminders, anxiety,	Robust approach to thematic analysis and reflexivity. However, small, homogenous sample (all participants were non-Black Latinx) limits generalisability.

(continued on next page)

Table 3 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
van Eggermont Arwidson et al. (2022)	Living a frozen life: A qualitative study on asylum seekers' experiences and care practices at accommodation centres in Sweden	Sweden	Collective/shared	Participants:14 (43% female). Age range: 22–62 years. Recruitment: asylum seekers in activities or support programs run by local non-government organisations were invited to participate.	Interviews analysed using inductive qualitative content analysis.	feeling lost and detached, somatic manifestations, and re-traumatisation of court. 4) Resilience: included reliance on “Dios” [God] for survival, family and friends, gratitude for survival and life’s blessings, reminders of worthiness, avoidance, and desire for liberation. 1) Frozen life: participants experienced a frozen life with limited agency due to environmental and social constraints, geographical isolation, financial limitations, and limited access to the wider host society. Life was so heavily restricted that it was compared to being a prisoner. Lack of privacy and sharing rooms with strangers caused insecurity. 2) Constant worrying and ‘overthinking’: this harmed participants’ MH. Being a parent added worries about children’s wellbeing and providing for them with limited resources. 3) Distractions and peer support: coping strategies included distraction, self-medicating with drugs, alcohol and medication, religion, prayer, exercise, reading books, volunteering, and expressing care and concern for other asylum seekers.	Culturally diverse sample. However, the study only included asylum seekers from two accommodation centres, which limits generalisability.
Laughon et al. (2022)	Health and safety concerns of female asylum seekers living in an informal migrant camp in Matamoros, Mexico	Mexico	Refugee camp	Participants: 43 female asylum seekers. Mean age: 33.5 years. Recruitment: participants were recruited from a tent encampment in Matamoros, Mexico.	Thematic analysis of interviews.	1) Constant vigilance: participants lived in a state of constant vigilance, which impacted their wellbeing. Concerns about interpersonal violence, fear for their children’s safety, and lack of security in the camp. 2) The effects of constant vigilance: to enhance safety, women kept their children near them and stayed in places they considered safer. Many women and children could not sleep and suffered from nightmares. Sadness and depression were common in children. 3) Lack of resources: women lived in temporary camping tents, which impacted	Study is one of few to describe the conditions along the US border. However, the sample was homogenous (Spanish speaking women from one camp), which limits generalisability.

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Table 3 (continued)

Authors and year	Title	Country	Housing type	Sample	Study design	Key findings	Strengths and limitations
						safety. 4) Uncertainty: participants lacked information about free legal aid services and did not know where or how to report violence.	

Fourteen studies sought to understand the experience of adult asylum seekers, but seven studies focused on specific groups of asylum seekers, such as parents (n = 3), women (n = 3), pregnant women (n = 2), and children and young people (n = 1). Some studies focused on a specific sub-population of asylum seekers, such as torture survivors (n = 2); however, most studies included a broader sample of asylum seekers, including people who had and people who had not experienced torture. Small sample size (less than 10 participants) was a limitation for numerous qualitative studies (Gewalt et al., 2018, 2019; Lietaert et al., 2020; Grønseth & Thorshaug, 2022; Domínguez et al., 2022). Although most qualitative studies solely used interviews to collect data, three studies used ethnography (Grønseth & Thorshaug, 2022; Moreira et al., 2020; Lietaert et al., 2020) and one study used auto-photography combined with interviews (Grønseth & Thorshaug, 2022). Additional data collection methods enriched the findings, but insufficient information was provided about how the researchers combined data from interviews, ethnography, and auto-photography. It was unclear which findings came directly from asylum seekers (e.g. quotes from interviews) compared to which findings came from the researchers themselves (e.g. field observations). It was also unclear how conflicting findings were managed, such as if asylum seekers' statements contradicted the researchers' observations.

Most qualitative studies would have benefited from greater reflexivity, in particular reflecting on the relationship between researchers and asylum-seeking participants and how power dynamics may have influenced participants' decision to partake in the study and what they disclosed in interviews. A notable exception was Domínguez et al. (2022)'s study, which stood out due to its robust approach to thematic analysis, which included a description of reflexivity and how peer debriefing was used to reflect on potential biases related to researchers' shared identities with participants. Lietaert et al. (2020) also demonstrated excellent reflexivity; the researchers had very different identities to their participants and reflected extensively on this, considering how their identities as white Belgian females influenced data analysis.

A challenge faced by some quantitative studies (Kashyap et al., 2019; Eisen et al., 2021; Whitsett and Sherman, 2017) was measuring 'housing' for asylum seekers in a bifurcated manner (e.g. 'stable' vs 'unstable') so that housing could be used as a factor for regression analysis. Some studies did not clarify how they defined 'stable' housing (Kashyap et al., 2019; Whitsett and Sherman, 2017), whereas other studies classified housing as 'stable' based on whether asylum seekers had their own room/apartment (e.g. Eisen et al., 2021). Focusing solely on whether asylum seekers had their own room/apartment fails to account for other factors that affect stability, such as whether asylum seekers face a constant threat of displacement from their accommodation, as is often the case for asylum seekers with ongoing asylum claims. Most studies did not adequately reflect on the problem of classifying housing in a reductionist manner as 'stable/unstable' (Kashyap et al., 2019; Whitsett and Sherman, 2017); however, Eisen et al. (2021) acknowledged this problem, admitting the possibility that housing classified as 'stable' may actually have had a negative impact on participants' mental health due to other factors relevant to housing. A qualitative study included in this review identified other factors relevant to housing, including overcrowding, unfriendly roommates, and neighbourhood safety (Ziersch et al., 2017). It is, therefore, a limitation that the quantitative studies did not account for these factors when classifying housing as 'stable'.

Mental health was measured differently across studies. All the qualitative studies measured mental health based on interview participants' subjective narratives; whereas quantitative studies measured mental health based on quantifiable data. Among quantitative studies, mental health was measured differently, drawing conclusion from different data sources. For example, some quantitative studies with large samples used self-harm rates to measure mental health (Hedrick et al., 2019, 2020); whereas smaller quantitative studies that recruited participants from mental health services (Whitsett and Sherman, 2017; Kashyap et al., 2019; Eisen et al., 2021) used valid and reliable outcome measures to measure symptoms of anxiety, depression, and trauma, such as the Harvard Trauma Questionnaire (HTQ), the Hopkins Symptom Checklist (HSCL), and Patient Health Questionnaire-9 (PHQ-9). The use of robust outcome measures that have been evaluated across cultures (Renner et al., 2006; Kaaya et al., 2002; Lotrakul et al., 2008) enhanced these studies and allowed for comparison to clinical populations in other mental health services.

Overall, while there were some limitations to the quality of the studies, the findings made a valuable contribution to the literature and had important implications for clinical practice and policy. Therefore, the studies were deemed to be of sufficient quality for inclusion in the

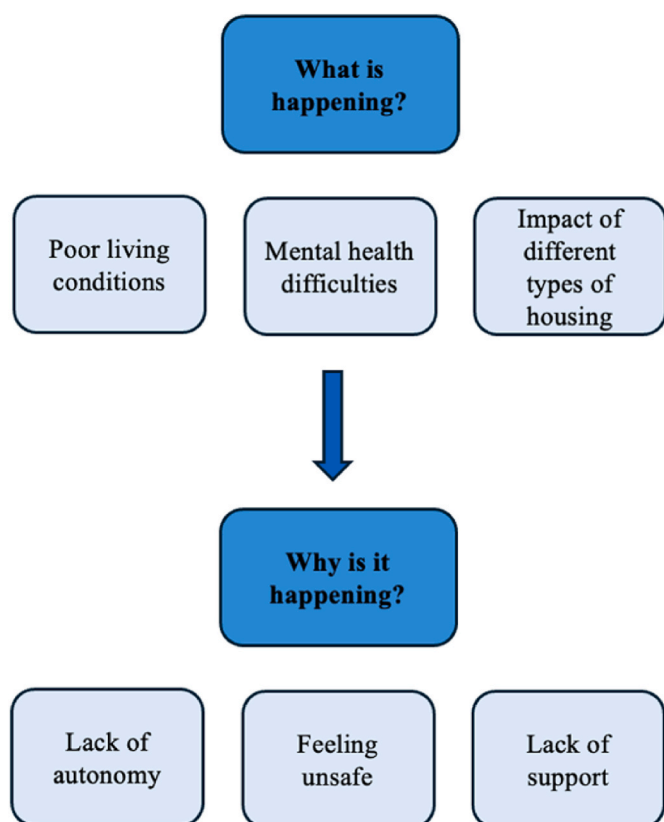


Fig. 2. Themes from systematic literature review.

narrative synthesis.

### 3.3. Synthesis of findings

Popay et al.'s (2006) narrative synthesis framework was used to identify themes to answer the research question: 'What is the relationship between housing and asylum seeker's mental health?' For clarity, themes have been grouped under two headings: 'What is happening?' and 'Why is it happening?' (see Fig. 2).

### 3.4. What is happening?

Three themes explain what is happening: poor living conditions, mental health difficulties, and the impact of different types of housing.

#### 3.4.1. Poor living conditions

Asylum seekers reported that poor living conditions negatively impacted their mental health. Poor living conditions included lack of space (Grønseth & Thorshaug, 2022; Ziersch et al., 2017), poor hygiene standards (Gewalt et al., 2019), fear of disease (Gewalt et al., 2019), dirty showers and toilets (Lietaert et al., 2020), overcrowding (Moreira et al., 2020; Ziersch et al., 2017), loud noises (Moreira et al., 2020; Gewalt et al., 2019), cold (Moreira et al., 2020; Ziersch et al., 2017), and damp (Ziersch et al., 2017). Poor living conditions were a major source of stress for asylum seekers who linked deterioration in their mental health to their living conditions (Whitehouse et al., 2021).

Whether housing was deemed suitable or unsuitable depended on the presence of poor living conditions (e.g. damp and cold) and the absence of good living conditions (e.g. sufficient space and good hygiene standards). Unsuitable housing impacted asylum seekers' mental health, causing new mental health difficulties and exacerbating pre-existing mental health difficulties.

#### 3.4.2. Mental health difficulties

Asylum seekers living in unsuitable housing reported myriad mental health difficulties. The most cited mental health difficulties across studies included anxiety, depression, PTSD, self-harm, suicidal ideation, and sleep difficulties. In a clinical sample of 105 asylum seekers in the USA, stable, uncrowded housing conditions significantly predicted lower depression, anxiety, and trauma symptoms (Whitsett and Sherman, 2017), demonstrating the impact of housing on asylum seekers' mental health. An Australian study comparing 2,399 asylum seekers to 21,462 Australian citizens found that asylum seekers were at a greater risk of poor mental health due to unsuitable housing (Martino et al., 2022). Asylum seekers in unsuitable housing were 2.4× more likely than asylum seekers in suitable housing to experience poor mental health.

Clean housing in good condition positively impacted mental health, whereas unsuitable housing negatively impacted mental health (Ziersch et al., 2017). Participants reported that poor living conditions exacerbated psychological distress, causing sadness, fear, insomnia, anxiety, and depression (Moreira et al., 2020). Numerous studies reported that asylum seekers' mental health deteriorated to the point that they experienced suicidal thoughts or self-harmed (Lietaert et al., 2020; Hedrick et al., 2020; Amarasena et al., 2023; Hedrick et al. (2019). Domínguez et al. (2022) described mental health deterioration as a form of 'psychological violence', which encompassed the descent into anxiety, hopelessness, dehumanisation, fear, and helplessness. Participants reported an increased prevalence of mental health symptoms, including nightmares, sleep difficulties, crying, intrusive thoughts, flashbacks, avoidance, and detachment. Living in a state of constant worrying and 'overthinking' harmed mental health. Furthermore, being a parent with children worsened anxiety, as parents experienced additional worries about their children's wellbeing (van Eggermont Arwidson et al., 2022).

In the only study that focused solely on children's wellbeing, mental health concerns were found in nearly 4 out of 5 asylum-seeking children (79%) subjected to Australia's offshore detention policy (Amarasena

et al., 2023). The authors concluded that higher rates of mental health difficulties in children housed in detention compared to children housed in the community indicates that detention adversely impacts asylum-seeking children's mental health. Children's most frequent symptoms included low mood (47%), sleep difficulties (47%), and suicidal ideation or self-harm (45%). The most diagnosed mental health conditions in children were depression (45%) and PTSD (13%). Laughon et al. (2022) also found that parents reported a high prevalence of mental health difficulties in their children, with sadness and depression being frequently reported.

#### 3.4.3. Impact of different types of housing

Different types of housing impact asylum seekers' mental health differently. In a German study that examined the impact of different types of housing on 1,535 participants' health, collective housing was identified as the worst type of housing and was significantly associated with poorer mental health compared to living in private housing, adjusting for age, gender, country of origin, and current work/education (Dudek et al., 2022). The study found that collective housing differed from private housing regarding space, neighbourhood, level of restrictions, social connections, contact with neighbourhood locals, and feelings of safety. Asylum seekers in collective housing reported being more socially isolated than their private housing counterparts and spent more time feeling bored. They also reported the lowest scores on belonging and satisfaction with their living situation. Ziersch et al. (2017) also found that collective housing harmed mental health, particularly for single male asylum seekers due to lack of space, privacy, and incompatibility with roommates.

Detention was identified as another type of housing that harmed mental health. A study focused on asylum-seeking children found that children held in detention for over a year were more likely to experience mental health difficulties (Amarasena et al., 2023). Moreover, a nationwide Australian study that examined self-harm rates among adult asylum seekers found that self-harm rates were the highest among asylum seekers in detention facilities and the lowest among asylum seekers in community housing (Hedrick et al., 2019). Rates of self-harm among asylum seekers in off-shore detention were 52× higher than the lowest recorded self-harm episode rates for community-housed asylum seekers. An American study focused on asylum seekers in detention identified 'detention violence' as an overarching theme with four sub-themes of physical violence, ethnoracial violence, psychological violence, and violence against children. These studies demonstrate the deleterious impact of detention on asylum seekers' mental health.

Although nearly all the quantitative studies found a significant association between housing and mental health, two studies presented contrary data. Eisen et al. (2021) found that changes in housing status were not associated with a change in PTSD symptom levels ( $p = .236$ ) or depressive symptom levels ( $p = .318$ ). However, this was a small study (78 participants), so it is possible that the study was not sufficiently powered to detect a significant effect. Additionally, housing was measured in a reductionistic manner as 'stable' or 'unstable', which may have missed other factors that impact mental health that were identified by other studies, such as lack of space, privacy, and incompatibility with roommates (Ziersch et al., 2017). Thus, it is possible that housing categorised as 'stable' by the study still negatively impacted asylum seekers' mental health because of other factors. Kashyap et al. (2019) also found that housing was not directly associated with reduced PTSD or depression severity, but it had the same problem as the previous study, in that it classified housing in the reductionistic manner of 'stable' or 'unstable'.

In summary, most studies found a relationship between housing and mental health, with some types of housing being viewed as more detrimental than others. Collective housing was identified as more damaging for mental health than private housing. Detention was highlighted as the worst type of housing, associated with the highest levels of self-harm. Private housing and community housing were viewed as

better alternatives, and relocating to more suitable housing significantly improved mental health, providing relief from symptoms of depression (Ziersch et al., 2017).

### 3.5. Why is it happening?

Three themes explain why housing impacts asylum seekers' mental health: lack of autonomy, feeling unsafe, and lack of support. The fourth theme explores coping strategies.

#### 3.5.1. Lack of autonomy

Many studies reported that lack of autonomy regarding housing caused psychological stress. Subthemes included dependence, lack of privacy, and lack of resources. Asylum seekers expressed frustration about being unable to choose where they lived (Hedstrom et al., 2021) or improve their living conditions, causing them to feel powerless (Gewalt et al., 2018). Asylum seekers living in accommodation centres were subjected to austere regulations, such as strict timing for canteen hours (Lietaert et al., 2020), having to sign in and out (Murphy et al., 2018), and not being allowed to choose or cook their own food (Gewalt et al., 2019). Asylum seekers compared their accommodation centre to a prison (Whitehouse et al., 2021; Murphy et al., 2018) because their choices and behaviour were similarly controlled and decisions were made for them (e.g. what to eat and when to eat it). This caused them to feel like dependent children (Murphy et al., 2018). In addition to dependence, lack of privacy undermined asylum seekers' autonomy and negatively impacted their mental health (Gewalt et al., 2018; Ziersch et al., 2017). Being forced to share their bedroom with strangers created feelings of insecurity (van Eggermont Arwidson et al., 2022) and often resulted in conflict exacerbated by different cultural expectations and lack of a common language (Whitehouse et al., 2021).

Lack of autonomy and privacy were particularly challenging for vulnerable groups, including pregnant women, children, and families. For vulnerable pregnant women, having to share their room with unknown and sometimes aggressive people caused them to feel anxious, especially at night (Gewalt et al., 2019). Parents faced additional challenges and reported limited parental agency, such as having to ask and be given permission for basic things, including meeting their children's needs (Lietaert et al., 2020). For parents, this resulted in loss of autonomy and self-efficacy as parents; for children, this resulted in feeling distressed because of unmet basic needs.

Lack of resources also contributed to asylum seekers' loss of autonomy and independence. Many studies reported a lack of financial resources (Gewalt et al., 2019; Hedstrom et al., 2021; van Eggermont Arwidson et al., 2022; Whitehouse et al., 2021). Insufficient finances caused psychological stress, particularly for parents who felt guilty about being unable to provide for their children (Hedstrom et al., 2021). Mothers expressed frustration about their restricted ability to respond to their children's needs, causing them to feel like they were failing as mothers (Murphy et al., 2018). Asylum seekers also experienced a lack of opportunity for meaningful activities, such as work and study (Hedstrom et al., 2021). This resulted in a diminishment of purpose and meaning in life (Murphy et al., 2018). Parents attempted to protect their children by not talking about stresses in front of them; however, maintaining a false pretence of normalcy damaged parents' mental health (Hedstrom et al., 2021).

#### 3.5.2. Feeling unsafe

The second theme that explains the relationship between housing and mental health is feeling unsafe. Many studies described housing replete with violence and aggression (Gewalt et al., 2018; Gewalt et al.,

2019; Laughon et al., 2022; Lietaert et al., 2020; Moreira et al., 2020). Violence was reported across the spectrum of types of housing included in this review, from refugee camps to accommodation centres. In a Greek study in which most parents described their children's health as deteriorating, feeling safe was an alleviating factor (De Montgomery et al., 2019). Feeling unsafe caused asylum seekers to live in a state of constant vigilance (Laughon et al., 2022) and be hyperalert to verbal and physical threats of violence. Constant vigilance and feeling unsafe caused restless sleep, particularly for vulnerable women and children (Gewalt et al., 2019). Parents described their children suffering from nightmares (Laughon et al., 2022) and displaying symptoms of anxiety, anger, and behavioural problems (Hedstrom et al., 2021).

Furthermore, sharing housing with strangers exacerbated feeling unsafe. In accommodation centres, parents felt powerless and unable to protect their children from other residents who displayed concerning behaviours, including insulting people, fighting, and physical and sexual violence towards their children (Lietaert et al., 2020). In refugee camps, people from different nationalities and cultural backgrounds were compelled to live together, often resulting in violent conflict and aggression (Moreira et al., 2020). For asylum seekers with mental health difficulties related to past traumas, living with unknown people aggravated re-experiencing symptoms of pre-migration traumas (van Eggermont Arwidson et al., 2022).

#### 3.5.3. Lack of support

The third theme that explicates the relationship between housing and mental health is lack of support. Asylum seekers' housing fostered a lack of support from asylum-seeking peers, the local community, and professionals. Many asylum seekers reported feeling socially isolated (Gewalt et al., 2018) and experiencing a lack of belonging in their community (Murphy et al., 2018). Attempts to build social support with other asylum seekers proved challenging due to short stays in reception centres, the frequency of transfers between accommodations, and language barriers (Gewalt et al., 2018). Some asylum seekers described feeling wearied by interacting with people who constantly came in and out of their lives (Grønseth & Thorshaug, 2022), preventing the formation of support networks.

Moreover, asylum seekers struggled to connect with locals in their community. An Irish study described asylum seekers' difficulties forming new relationships due to their stigmatised 'asylum seeker' identity, which prevented them from feeling part of the Irish community (Murphy et al., 2018). A Germany study found that 70% of collective housing residents had no contact with neighbourhood locals (Dudek et al., 2022), which demonstrates the insularity of asylum housing. Factors that contribute to limited access to the wider community included restricted public transport networks and prohibitive costs (van Eggermont Arwidson et al., 2022). Lack of social support from asylum-seeking peers and the local community created a sense of social isolation for asylum seekers, which impacted their mental health (Ziersch et al., 2017).

In addition to lack of support from peers and the local community, many asylum seekers reported lack of support from professionals. Moreira et al. (2020) described limited access to health care professionals, which impacted health. Laughon et al., 2022 found that asylum seekers lacked information about free legal services and about procedures for reporting violence. A Belgian study, which included both asylum seekers and accommodation staff, found poor communication between asylum seekers and staff (Whitehouse et al., 2021). Asylum seekers thought that staff communicated disrespectfully, causing them to respond with animosity towards the system or the staff enforcing it. Asylum seekers also reported that staff were insensitive to their needs,

which engendered feeling of worthlessness and social isolation.

#### 3.5.4. Coping strategies

The fourth and final theme, coping strategies, describes the ways in which asylum seekers attempted to prevent housing difficulties from negatively impacting their mental health. Subthemes include faith, hope, and social support. Many asylum seekers found solace in their faith and relied on religion and prayer to cope with difficulties (Domínguez et al., 2022; Gewalt et al., 2018) (van Eggermont Arwidson et al., 2022). An American study that examined sources of resilience reported that asylum seekers relied on 'Dios' [God] for survival (Domínguez et al., 2022). Asylum seekers also coped by maintaining a desire for liberation (Domínguez et al., 2022) and holding onto hope that their situation would improve in the future (Gewalt et al., 2018).

In addition to their internal resources (faith and hope), asylum seekers also looked externally, finding comfort in social support from family and friends (Domínguez et al., 2022), helpful professionals (Gewalt et al., 2018), and people in their community (Whitehouse et al., 2021). Expressing care and concern for other asylum seekers improved mental health (van Eggermont Arwidson et al., 2022), as well as spending time outside the centre and integrating into the local community (Whitehouse et al., 2021). Helping others created a sense of connectedness and satisfaction at doing something meaningful (van Eggermont Arwidson et al., 2022), which was protective for mental health.

## 4. Discussion

### 4.1. Strengths

To the best of the authors' knowledge, this is the first systematic literature review to critically examine the relationship between housing and asylum seekers' mental health. Key strengths include the scope of the review, which encompassed all study designs, including quantitative, qualitative, and mixed methods designs. Moreover, the literature was thoroughly explored using multiple databases with peer-reviewed research and grey literature. Selection and publication bias was minimised by using two independent reviewers in both title/abstract screening and full-text review of the studies (Stoll et al., 2019). The review focused on a population often considered 'hard to reach' (Enticott et al., 2017) and filled a gap in the literature by focusing specifically on asylum seekers, as prior research indicates a dearth of knowledge pertaining to the relationship between housing and asylum seekers' mental health (Ziersch and Due, 2018).

This review expands upon the findings of the last systematic literature review (Ziersch and Due, 2018), which examined the relationship between housing and health for refugees and asylum seekers. Whereas the previous review focused on health more broadly, encompassing physical and mental health, this review focused specifically on mental health. Moreover, whereas the previous review included both refugees and asylum seekers, this review included solely asylum seekers, as asylum seekers are distinctly different from refugees and have higher rates of mental health difficulties. The most relevant finding from the previous review was that safety is linked to mental health for refugees and asylum seekers. This review also found a link between safety and mental health; one of the three themes that explained the relationship between housing and mental health was feeling unsafe, insecure and unprotected. This review expanded upon the concept of feeling unsafe and further contributed to the literature by exploring the psychological consequences of lacking safety and feeling endangered for asylum seekers, including exacerbation of mental health difficulties, such as

anxiety, depression, and PTSD. This review also highlighted other important factors that explain the relationship between housing and mental health, including lack of autonomy and lack of support.

### 4.2. Limitations

The review is not without limitations, including limitations pertaining to the inclusion criteria, heterogeneity, and methodological issues pertaining to the included studies. Due to time, team, and funding constraints, the review only included studies published in or translated into English between January 2017 and May 2023. Solely including studies published in English may have prevented the inclusion of relevant studies published in other languages and geographical asylum seeker representation (Zenni et al., 2023). Most asylum seekers reside in countries in which English is not the first language; for example, the countries that host the largest number of asylum seekers are Iran, Turkey, Germany, Colombia, and Uganda (UNHCR, 2023). Solely including studies published in English may have limited this review's ability to capture data from countries that host large numbers of asylum seekers. Therefore, future research would benefit from including studies published in other languages, particularly languages spoken in countries that host the most asylum seekers, as this could increase geographical asylum seeker representation.

A further limitation was heterogeneity, as the review included studies which measured mental health differently (using quantitative or qualitative methods) and included many different types of housing, including collective/shared housing, community housing, private housing, refugee camps, detention centres, and hotels. Data collection methods were similarly heterogenous, with quantitative studies drawing data from mental health service outcome measures, national surveys, and longitudinal projects focused on refugees and asylum seekers. In comparison, qualitative studies mainly used interviews, although ethnography and auto-photography were also employed. High levels of heterogeneity regarding the included studies' methodologies, types of housing, and data collection methods made meaningful comparison across studies challenging.

Methodological issues pertaining to the included studies was another limitation. There is no universally agreed upon definition of 'stable' or 'unstable' housing, which made comparisons between studies challenging. Housing classified as 'stable' in one study could have been classified as 'unstable' in a different study because each study used a different definition of housing stability. Furthermore, studies used a myriad of different mental health measures with asylum seekers who originate from diverse cultures. A lack of culturally appropriate measures for use with asylum seekers made cross-cultural comparisons difficult and limited the generalisability of the findings.

Potential confounding factors that could influence mental health independently of housing conditions include a history of mental health difficulties, the type and extent of pre-migration or peri-migration trauma, regional or environmental conditions in the host country, the presence of family members in the host country, and opportunities to maintain contact with loved ones remaining in the home country. Study samples were heterogenous and did not account for these confounding factors, which made comparison across studies challenging. For instance, some samples included solely adults, other samples included children, and other samples solely included torture survivors; these differences may have important mental health implications independent of housing conditions. For example, as a result of pre-migration trauma, torture survivors could have higher rates of mental health difficulties, which could bias the relationship between mental health and housing.

It is also worth noting that although this review was mixed-methods,

no mixed-methods studies were included, which demonstrates the dearth of mixed-methods studies in this field. Thus, future research could benefit from taking a mixed methods approach when researching asylum seekers. Despite its limitations, the review made a meaningful contribution to the limited literature on the relationship between housing and asylum seekers' mental health. The review identified three themes (poor living conditions, mental health difficulties, and the impact of different types of housing), which indicate that asylum seekers are subjected to poor living conditions, which impact their mental health. The review found that some forms of housing for asylum seekers are particularly detrimental for mental health, and other types of housing can improve mental health. Collective housing was identified as more damaging for mental health than private housing. Detention was highlighted as the worst form of housing, associated with the highest levels of self-harm. Private housing and community housing were viewed as better alternatives for asylum seekers' mental health. Finally, relocating to more suitable housing was found to improve mental health, providing relief from symptoms of depression.

#### 4.3. Policy and clinical implications

These findings have clear policy and clinical implications. Policy implications include the need to safely house all asylum seekers with an emphasis on safeguarding the most vulnerable asylum seekers, including pregnant women, families with children, and asylum seekers with mental health needs. Collective housing and detention should be avoided for all asylum seekers, as these types of housing are detrimental for mental health. As detention was identified as the worst form of housing associated with the highest levels of self-harm, the practice of housing asylum seekers in detention facilities should be stopped. It is strongly recommended that vulnerable asylum seekers, including children and asylum seekers with mental health needs, should be removed from detention facilities and rehoused in more appropriate housing. As private housing and community housing were identified as better housing alternatives that could improve mental health, it is recommended that asylum seekers be rehoused in private and community housing, as this could improve their mental health outcomes. Furthermore, the review identified three themes to explicate why housing impacts asylum seekers' mental health: lack of autonomy, feeling unsafe, and lack of support. Unsuited housing fosters a lack of autonomy and causes asylum seekers to feel unsafe, engendering mental health deterioration. Lack of support from asylum-seeking peers, the local community, and professionals contributes to a sense of social isolation and marginalisation that further destabilises mental health.

These findings indicate the need for clinical interventions that go beyond psychiatric treatments and target psychosocial wellbeing, addressing issues of social isolation and supporting asylum seekers to manage psychosocial difficulties, including housing problems.

Social isolation could be addressed through initiatives such as social prescribing, community support groups, and befriending. For example, befriending services address social isolation by matching asylum seekers with 'local friends' who volunteer to meet regularly with asylum seekers, practice speaking English, and help asylum seekers integrate into their host society. Community support groups provide targeted support to specific groups of asylum seekers, such as Turkish and Kurdish asylum seekers. Community support groups address loneliness and promote social inclusion by running bilingual groups, such as walking, craft, and yoga groups. Psychosocial difficulties, including feeling unsafe in one's accommodation, could be addressed by ensuring that housing placements are in safe neighbourhoods and providing asylum seekers with information to address behaviours that make them feel unsafe (e.g. process for calling the police, access to interpreters to raise issues, complaints procedures). This would empower asylum seekers to address housing issues and help restore their sense of agency and autonomy.

The review found that asylum seekers use three coping strategies to reduce the impact of housing difficulties on mental health: faith, hope, and social support. As faith and hope are internal resources, clinicians should keep these in mind and encourage their asylum-seeking clients to seek solace in their faith and maintain a sense of hope for the future. As social support was identified as the third coping strategy, it is important to note barriers that prevent asylum seekers from accessing social support, including frequent accommodation transfers, language barriers, stigmatisation, restricted public transport networks, prohibitive costs, lack of access to professionals, and poor communication between asylum seekers and staff. Policy changes should be implemented to address these barriers, such as providing interpreters to enable communication between asylum seekers and staff, increasing access to public transportation (e.g. free bus passes), and offering a range of integration activities alongside language classes in the community to reduce stigmatisation and promote integration.

#### 5. Conclusion

Overall, this systematic literature review reinforces the importance of housing for asylum seekers' mental health. Poor living conditions were found to negatively affect asylum seekers' mental health, with some forms of housing posing greater risks than others. Collective housing and detention were identified as particularly harmful for mental health, with detention emerging as the most detrimental, linked to the highest levels of self-harm. In contrast, private and community housing were considered more supportive and beneficial for mental health outcomes. Three key themes explained the impact of housing on asylum seekers' mental health, including lack of autonomy, lack of safety, and insufficient support. Policy recommendations emphasise providing safe housing for asylum seekers and avoiding housing arrangements that harm mental health, especially detention. Clinically, there is a need to focus on the psychosocial wellbeing of asylum seekers by addressing social isolation and exclusion and helping asylum seekers cope with post-migration challenges, including housing problems, and successfully integrate into the host society.

#### CRediT authorship contribution statement

**Janelle Spira:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Dafni Katsampa:** Writing – review & editing, Formal analysis, Data curation. **Hannah Wright:** Writing – review & editing, Supervision, Conceptualization. **Kemi Komolafe:** Writing – review & editing, Supervision.

#### Ethical approval not required

Ethical approval was not required, as the study was a systematic literature review and did not involve participants.

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#### Declaration of competing interest

We have nothing to declare.

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None.



Appendix A

Overview of the search strategy

SPIDER Criteria	Search Terms
Sample	Asylum seekers
Phenomenon of Interest	Housing
Design	Qualitative study design, quantitative study design, mixed methods design
Evaluation	Association on mental health, impact on mental health
Research Type	Qualitative method, quantitative method, mixed methods
	'asylum seeker'*
	hous* OR accommodation
	Published literature OR grey literature
	'mental health' OR 'mental illness' OR anxiety OR depress* OR ptsd OR stress OR distress
	Qualitative OR quantitative OR mixed methods

Data availability

Data will be made available on request.

References

Amarasena, L., Samir, N., Sealy, L., Hu, N., Rostami, M.R., Isaacs, D., Gunasekera, H., Young, H., Agrawal, R., Levitt, D., Francis, J.R., Coleman, J., Mares, S., Larcombe, P., Cherian, S., Raman, S., Lingam, R., Zwi, K., 2023. Offshore detention: cross-sectional analysis of the health of children and young people seeking asylum in Australia. *Arch. Dis. Child.* 108 (3), 185–191. <https://doi.org/10.1136/archdischild-2022-324442>.

Bernardes, D., Wright, J., Edwards, C., Tomkins, H., Dlfosz, D., Livingstone, A.G., 2010. Asylum seekers' perspectives on their mental health and views on health and social services: contributions for service provision using a mixed- methods approach. *Int. J. Migrat. Health Soc. Care* 6 (4), 3–19.

Blackmore, R., Boyle, J.A., Fazel, M., Ranasingha, S., Gray, K.M., Fitzgerald, G., Misso, M., Gibson-Helm, M., 2020. The prevalence of mental illness in refugees and asylum seekers: a systematic review and meta-analysis. *PLoS Med.* 17 (9), e1003337.

Bonnefoy, X., 2007. Inadequate housing and health: an overview. *Int. J. Environ. Pollut.* 30, 411–429.

De Montgomery, C.J., Stathopoulou, T., Eikemo, T.A., 2019. Asylum-seeking parents' reports of health deterioration in their children since fleeing their home country. *J. Refug. Stud.* 32 (1), 152–162. <https://doi.org/10.1093/jrs/fez018>.

Domínguez, D.G., Hernandez-Arriaga, B., Noriega, M.A., García, D., Martínez, D.A., 2022. "They treat us like we are not human": Asylum seekers and "la migras" violence. *Psychol. Violence* 12 (4), 241–251. <https://doi.org/10.1037/vio0000434>.

Dudek, V., Razum, O., Sauzet, O., 2022. Association between housing and health of refugees and asylum seekers in Germany: explorative cluster and mixed model analysis. *BMC Public Health* 22 (1). <https://doi.org/10.1186/s12889-021-12458-1>.

Eisen, E., Howe, G., Cogar, M., 2021. The impact of post-migration factors on posttraumatic stress and depressive symptoms among asylum seekers in the United States. *J. Immigr. Refug. Stud.* 19 (4), 573–586. <https://doi.org/10.1080/15562948.2020.1856457>.

Enticott, J.C., Shawyer, F., Vasi, S., Buck, K., Cheng, L.-H., Russell, G., Kakuma, R., Minas, H., Meadows, G., 2017. A systematic review of studies with a representative sample of refugees and asylum seekers living in the community for participation in mental health research. *BMC Med. Res. Methodol.* 17 (1), 37.

Gewalt, S.C., Berger, S., Szecsenyi, J., Bozorgmehr, K., 2019. 'If you can, change this system'- Pregnant asylum seekers' perceptions on social determinants and material circumstances affecting their health whilst living in state-provided accommodation in Germany - a prospective, qualitative case study. *BMC Public Health* 19 (1). <https://doi.org/10.1186/s12889-019-6481-2>.

Gewalt, S.C., Berger, S., Ziegler, S., Szecsenyi, J., Bozorgmehr, K., 2018. Psychosocial health of asylum seeking women living in state-provided accommodation in Germany during pregnancy and early motherhood: a case study exploring the role of social determinants of health. *PLoS One* 13 (12). <https://doi.org/10.1371/journal.pone.0208007>.

Gleeson, C., Frost, R., Sherwood, L., Shevlin, M., Hyland, P., Halpin, R., Murphy, J., Silove, D., 2020. Post-migration factors and mental health outcomes in asylum-seeking and refugee populations: a systematic review. *Eur. J. Psychotraumatol.* 11 (1).

Grønseth, A.S., Thorshaug, R.Ø., 2022. Struggling for home where home is not meant to be: a study of asylum seekers in reception centers in Norway. *Focaal* 2022 (92), 15–30. <https://doi.org/10.3167/fcl.2022.920102>.

Hedrick, K., Armstrong, G., Coffey, G., Borschmann, R., 2019. Self-harm in the Australian asylum seeker population: a national records-based study. *SSM - Popul. Health* 8. <https://doi.org/10.1016/j.ssmph.2019.100452>.

Hedrick, K., Armstrong, G., Coffey, G., Borschmann, R., 2020. Self-harm among asylum seekers in Australian onshore immigration detention: how incidence rates vary by held detention type. *BMC Public Health* 20 (1). <https://doi.org/10.1186/s12889-020-08717-2>.

Hedstrom, E., Kovshoff, H., Hadwin, J.A., Kreppner, J., 2021. Exploring parenting narratives in asylum seeking populations in Sweden: examining the effect of post-migration stress on families through grounded theory. *J. Refug. Stud.* 34 (3), 3381–3398. <https://doi.org/10.1093/jrs/feaa136>.

Home Office. How many people do we grant asylum or protection to? UK GOV. <https://www.gov.uk/government/statistics/immigration-statistics-year-ending-june-2022/how-many-people-do-we-grant-asylum-or-protection-to>.

Hong, Q.N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O' Cathain, A., 2018. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Educ. Inf.* 34 (4), 285–291.

Kaaya, S.F., Fawzi, M.C.S., Mbwambo, J.K., Lee, B., Msamanga, G.I., Fawzi, W., 2002. Validity of the Hopkins Symptom Checklist-25 amongst HIV- positive pregnant women in Tanzania. *Acta Psychiatr. Scand.* 106, 9–19.

Kashyap, S., Page, A.C., Joscelyne, A., 2019. Post-migration treatment targets associated with reductions in depression and PTSD among survivors of torture seeking asylum in the USA. *Psychiatry Res.* 271, 565–572. <https://doi.org/10.1016/j.psychres.2018.12.047>.

Laughon, K., Montalvo-Liendo, N., Eaton, S., Bassett, L., 2022. Health and safety concerns of female asylum seekers living in an informal migrant camp in Matamoros, Mexico. *J. Adv. Nurs.* 79 (5), 1830–1839. <https://doi.org/10.1111/jan.15511>.

Lietaert, I., Verhaeghe, F., Derluyn, I., 2020. Families on hold: how the context of an asylum centre affects parenting experiences. *Child Fam. Soc. Work* 25 (S1), 1–8. <https://doi.org/10.1111/cfs.12706>.

Lotrakul, M., Sumrithe, S., Saipanish, R., 2008. Reliability of the Thai version of the PHQ-9. *BMC Psychiatry* 8 (46).

Martino, E., Li, Y., Kali-Opio, J., Bentley, R., 2022. Between liminality and a new life in Australia: what is the effect of precarious housing on the mental health of humanitarian migrants? *Cities* 131.

Methley, A.M., Campbell, S., Chew-Graham, C., McNally, R., Cheraghi-Sohi, S., 2014. PICO, PICOS and SPIDER: a comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. *BMC Health Serv. Res.* 14 (1), 1–10.

Moreira, A.L., Barbosa, M., Maia, M., Veiga, E., Martins, F., Santos, M., 2020. Lives on hold: the experiences of asylum seekers in Moria refugee camp. *Community Psychol. Global Perspect.* 6 (1), 92–107.

Murphy, R., Keogh, B., Higgins, A., 2018. Erosion of meaning in life: African asylum seekers' experiences of seeking asylum in Ireland. *J. Refug. Stud.* 32 (2), 278–301. <https://doi.org/10.1093/jrs/fey027>.

Nutsch, N., Bozorgmehr, K., 2020. Der Einfluss postmigratorischer Stressoren auf die Prävalenz depressiver symptom bei Geflüchteten in Deutschland. Analyse anhand der IAM-BAMF-SOEP-Befragung 2016. *Bundesgesundheitsbl* 63, 1470–1482.

Pérez-Sales, P., Galán-Santamarina, A., Zunzunegui, M.V., López-Martin, S., 2022. Refugee camps as torturing environments—an analysis of the conditions in the Moria Reception Center (Greece) based on the torturing environment scale. *Int. J. Environ. Res. Publ. Health* 19 (16), 10233.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., Britten, N., Roen, K., Duffy, S., 2006. Guidance on the conduct of narrative synthesis in systematic reviews. *ESRC Methods Programme*.

Renner, W., Salem, I., Ottomeyer, K., 2006. Cross-cultural validation of measures of traumatic symptoms in groups of asylum seekers from Chechnya, Afghanistan, and West Africa. *Social. Behav. Pers.* 34, 1101–1114.

Sinnerbrink, I., Silove, D., Field, A., Steel, Z., Manicavasagar, V., 1997. Compounding of premigration trauma and postmigration stress in asylum seekers. *J. Psychol.* 131 (5), 463–470.

Stoll, C.R.T., Izadi, S., Fowler, S., Green, P., Suls, J., Colditz, G.A., 2019. The value of a second reviewer for study selection in systematic reviews. *Res. Synth. Methods* 10 (4), 539–545. <https://doi.org/10.1002/jrsm.1369>.

Toar, M., O'Brien, K.K., Fahey, T., 2009. Comparison of self-reported health & healthcare utilisation between asylum seekers and refugees: an observational study. *BMC Public Health* 9. <https://doi.org/10.1186/1471-2458-9-214>.

UNHCR, 2023. Refugee Data Finder. The UN Refugee Agency. <https://www.unhcr.org/refugee-statistics/>.

van Eggermont Arwidson, C., Holmgren, J., Gottberg, K., Tinghög, P., Eriksson, H., 2022. Living a frozen life: a qualitative study on asylum seekers' experiences and care

- practices at accommodation centers in Sweden. *Conflict Health* 16 (1). <https://doi.org/10.1186/s13031-022-00480-y>.
- Waterman, L.Z., Katona, C., Katona, C., 2020. Assessing asylum seekers, refugees and undocumented migrants. *BJPsych Bull.* 44 (2), 75–80.
- Whitehouse, K., Lambe, E., Rodriguez, S., Pellecchia, U., Ponthieu, A., Van den Bergh, R., Besselink, D., 2021. A qualitative exploration of post-migration stressors and psychosocial well-being in two asylum reception centres in Belgium. *Int. J. Migrat. Health Soc. Care* 17 (3), 241–258. <https://doi.org/10.1108/IJMHS-08-2020-0082>.
- Whitsett, D., Sherman, M.F., 2017. Do resettlement variables predict psychiatric treatment outcomes in a sample of asylum-seeking survivors of torture? *Int. J. Soc. Psychiatr.* 63 (8), 674–685.
- Zenni, R.D., Barlow, J., Pettorelli, N., Stephens, P., Rader, R., Siqueira, T., Gordon, R., Pinfield, T., Nuñez, M.A., 2023. Multi-lingual literature searches are needed to unveil global knowledge. *J. Appl. Ecol.* 60 (3), 380–383. <https://doi.org/10.1111/1365-2664.14370>.
- Ziersch, A., Due, C., 2018. A mixed methods systematic review of studies examining the relationship between housing and health for people from refugee and asylum seeking backgrounds. *Soc. Sci. Med.* 213, 199–219. <https://doi.org/10.1016/j.socscimed.2018.07.045>.
- Ziersch, A., Walsh, M., Due, C., Duivesteyn, E., 2017. Exploring the relationship between housing and health for refugees and asylum seekers in south Australia: a qualitative study. *Int. J. Environ. Res. Publ. Health* 14 (9). <https://doi.org/10.3390/ijerph14091036>.