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Review Article

Barriers to Optimal Health for Under 5s Experiencing Homelessness and Living In Temporary Accommodation in High-Income Countries: A Scoping Review

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Abstract

Background: The first 5 years of life are crucial for optimising growth, health, and cognitive development. However, many children do not reach their full cognitive and developmental potential because of multilevel barriers, including those resulting from poverty and homelessness. This review summarises the evidence characterising the barriers to achieving optimal health and cognitive outcomes, and to accessing health services for homeless children younger than 5 years of age (U5s)-one of the most vulnerable populations in High Income Countries (HICs).

Methods: For this scoping review, we followed the PRISMA-ScR checklist and CATS framework. We searched Medline, PubMed, Embase, CINAHL, Web of Science, OVID Maternity and Infant Care, and The Cochrane Library (publications dates from Jan 1, 1980, to Jun 23, 2020) using the key words "homelessness", "housing", "paediatrics", "interpersonal relations", "social exclusion", "toddler", "children under 5", "engagement", and "communication and insecurity". The search strategy yielded 3253 articles. Retrieved articles were organised by study design. Because of the considerable heterogeneity of methods and outcomes, we used a narrative synthesis analytic approach. Our outcome of interest was barriers to optimal health and accessing health services, focusing on U5s living in HICs.

Findings: Twenty-nine full texts were selected in the final synthesis, including primary research studies and systematic or narrative reviews of primary research studies from HICs. There was limited evidence describing links among housing insecurity, health, and cognitive outcomes in U5s. This age group was rarely studied as a discrete group and often combined with older ages (eg, ≤25 years). The quality of articles varied greatly because of the heterogeneity in study design. Nevertheless, important themes were identified: barriers were described at the individual and family level (eg, ethnicity, immigration status, and fear), system level (eg, policies, poor access to medication, absence of care plan, and no insurance) and community level (eg, transportation limitations and poor housing conditions).

Interpretation: Although evidence is sparse, further methodologically rigorous research is needed to identify what barriers exist for U5s and their parents in accessing health services, and how this affects the child's health. The multi-level nature of these barriers implies a system's approach may be required. However, more evidence is needed including cross-sector studies and tailored interventions to address these barriers by working directly with experts with experience of social exclusion and their children.

INTRODUCTION

The first five years of life is a critical period for growth, optimal health and brain development [1,2] during which approximately 90% of brain development occurs [3-6]. However, many children experiencing poverty and/or homelessness do not reach their full developmental and/or growth potential as a result of associated social, cultural, economic, political and environmental barriers, which have both short- and long-term impacts on their health [7] (Figure 1). Challenges to achieving optimal child development and health are not only prevalent in low-resource settings, but also across high-income countries (HICs) and certain high-risk populations within these settings [8]. UNICEF previously assessed child health and wellbeing in HICs using six dimensions: 1) material well-being, 2) health and safety, 3) educational well-being, 4) family and peer relationships, 5) behaviour and risks, and 6) subjective well-being [9]. In comparison to Organisation for Economic Co-operation and Development (OECD) countries such as the Netherlands (Ranking position 4.2) and Sweden (5.0), the United States (US; 18.0) and United Kingdom (UK; 18.2) ranked lowest prospectively in the bottom third on average across the six categories. More specifically, the US and UK had the lowest individual scores in five of the aforementioned categories especially relative poverty, family structures and peer relationships, health behaviour and risks, violence and subjective (self-reported) well-being [9,10].

Homelessness among families with children has drastically

increased in high-income OECD countries. In Ireland, family homelessness almost quadrupled between 2014 and 2018, from 407 to more than 1,600 households. From 2006-2013, New Zealand saw a 44% increase in family homelessness. In 2018, the US had more than 56,300 families with children representing one-third of the homeless population [11]. In 2019, the Children's Commissioner suggested that there could be more than 210,000 homeless children in temporary accommodation or sofa surfing, and approximately 585,000 who are either homeless or at risk of becoming homeless in England [12,13]. Furthermore, according FEANSTA, children and young people experiencing homelessness as individuals and as a group are "insufficiently visible" in policy and regulation on homelessness and housing-related issues [14].

There are a myriad of direct and indirect health, social, and educational consequences for children and families experiencing homelessness. In Denmark, a nationwide registry-based cohort study with data from more than 1 million children aged 0–16 years found the incidence of any psychiatric disorder was 15·1 cases per 1000 person-years in children, with at least one parent with a history of homelessness, compared with 6·0 per 1000 person-years in those whose parents had not been homeless [15]. In Los Angeles (US), 78% of 169 school-age children living in emergency family shelters suffered from either depression, a behavioural problem, or severe academic delay [16] Homelessness and housing instability does not have just immediate implications, but also long-term impacts children's health: Vostanis et al [17] have shown that even after rehousing, families who have a history of homelessness continued to suffer from high levels of mental disorders (mothers 26% v 5%, P=0.04; children 39% v 11%, P=0.0003) with considerably less social support and poor social integration.

Multi-level barriers warrant special attention because they are often the root causes of health inequalities and inequities, which contribute to intergroup differences in health outcomes [18].

Children under age of 5 years (U5s) may have an invisible plight since they are often living in temporary accommodations rather than living on the streets as homeless (e.g., rough sleepers) [7].

Due to increasing rates of child homelessness in the HICs, the primary objective of this review was to answer the question: What is known about the range of barriers (e.g., political, social, cultural, economic, educational, environmental) to achieving optimal health and wellbeing in U5s living in temporary or insecure accommodation in high-income countries (HICs)? In order to answer this question, in this review, we will summarize the characteristics of these barriers by describing the challenges often faced by children and their families experiencing homelessness.

METHODS

Overview

We followed the PRISMA extension for Scoping Reviews checklist [19] to conduct this review. We undertook a quality assessment of the studies using the Critically Applied Topics (CATS) framework [20]. This framework was chosen as it provides a snapshot of the best available evidence by rating each study according to methodological design and lends itself to a variety of study designs. The search was undertaken in August 2019 and repeated in June 2020. Given the range of studies included in this scoping review, a narrative approach was selected as the most appropriate synthesis method involving the selection, chronicling, and ordering of evidence. All HICs were included, since this is a global issue, consistently present throughout the Global North.

Theoretical Framework

In an effort to capture the multifaceted nature of homelessness and its relationship with child health, our analysis was guided by the Social Ecological Model (SEM), a theory-based framework which describes the complex, interactive effects of personal and environmental factors [21]. The health map for the local human habitat (HM) [22] was also incorporated because it acknowledged the determinants of health and wellbeing within neighbourhoods and how public health can be jeopardised by both "the manner of human intervention in the natural world and the manner of development activity in our built environment." [22,23] Since more than one model was used to guide this review, we created a simplified adaptation or concept map [24], which integrated both the SEM and HM (Figure 2).

Search strategy and selection criteria

We only included primary research studies or reviews of primary research studies. To ensure a wide selection of studies, the search (conducted by DMR) incorporated the following sources and methods: Medline, PubMed, Embase, CINAHL, Web of Science, OVID Maternity and Infant Care, and The Cochrane Library (publications dates from Jan 1, 1980, to Jun 23, 2020**)** in English using the key words and MESH headings found in the following search strategy. U5s were defined as children aged from birth to < 5 years. Keywords on specific health outcomes were not included because we wanted to search to remain broad and open-ended. All references were imported into the Mendeley reference software.

Search Strategy
("vulnerable children" OR "children under five" OR "children under 5" OR "children age five or younger" OR "under-fives" OR "child homelessness" OR "homeless children" OR infant OR baby OR babies OR toddler OR newborn OR neonat * OR child OR preschool OR nursery school OR Kid OR pediatric * OR minors OR Boy OR girl)
AND
("short term accommodation" OR "short term housing" OR "temporary accommodation" OR temporary housing "OR " insecure housing "OR " insecure accommodation" OR homeless OR homelessness OR housing)
AND
("barriers" OR "social segregation" OR "social exclusion" OR "exclusion" OR "social isolation" OR "communication" OR "interpersonal relations" OR "interactions" OR "service access" OR "engagement" OR "engage")

DMR screened the titles and abstracts using the inclusion criteria and obtained the relevant full-text articles to assess for final eligibility. DMR also hand searched the Evidence Gaps Database produced by the Centre for Homelessness Impact [25] and the studies within full-text reviews. There was no universal

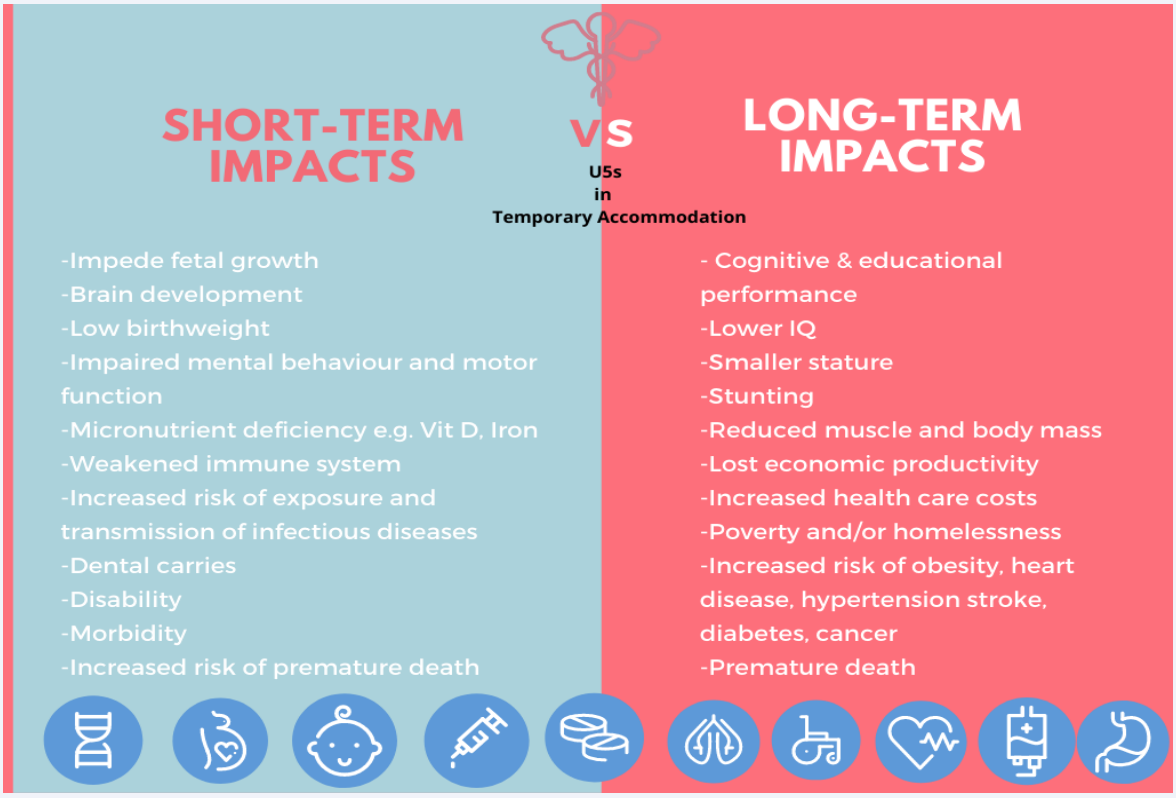

Figure 1 Short-term vs. Long-term Impact of Homelessness on Under5s Living in Temporary Accommodation.

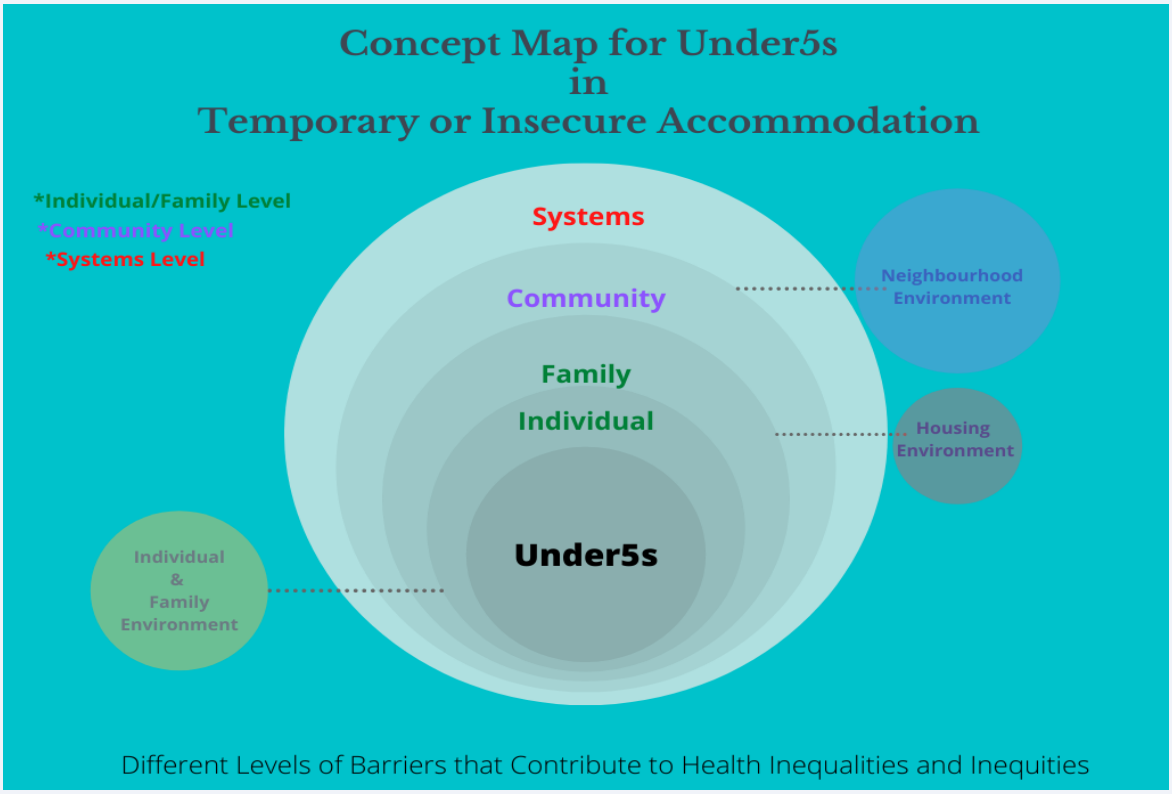

Figure 2 Concept Map for Under 5s in Temporary Accommodation demonstrating the different types of barriers and environments that contribute to health inequalities and inequities.

definition of homelessness in addition to a lack of standardization among definitions and metrics across reports. All definitions of homelessness with the exception of 'rough sleeping' variations were utilised in the search to avoid missing any potential studies. Studies meeting the inclusion criteria (temporary or insecure accommodation, shelters, bed-and-breakfast, council housing) were extracted for full paper review. The inclusion and exclusion criteria are described in the box below:

Inclusion Criteria
• Under5s (children age: birth < 5 years) in study sample • High-income countries as defined by the World Bank • Primary research studies (no excluding study designs) or Reviews of primary research studies • Library (publications dates from Jan 1, 1980, to Jun 23, 2020**)** in English • Temporary or insecure accommodation, shelters, bed-and-breakfast, council housing • Outcome: health or health services access
Exclusion Criteria
• The full text was not available (e.g. abstract only with insufficient detail); • The age group did not contain any children younger than 5 years old; or the age group was not defined/specified • And/or the study did not involve the parents of the desired age group • Focused primarily on parental health without the implications on child health • Grey literature, not a primary research study or a review of primary research study • Not in a high-income country

Data extraction and analysis

Articles were first evaluated by title and abstract. Any duplicate studies were noted and then removed from the total studies assessed (Figure 3). Any articles that were in question were resolved through discussion of the CATS framework by DMR and CL. To determine the methodological appropriateness of effect studies and impact evaluations, we used six levels of appropriateness (**Table 1),** which were based on the classification system of Shadish, Cook and Campbell (2002), and Petticrew and Roberts (2006) [20,26].

A standardised data extraction form was used to collect data on study design, country, sample characteristics, age of children, definition of homelessness, methodology, measures and instruments used, inclusion and exclusion criteria, data-analysis methods, and outcomes [27] as well as the reported barriers to optimal health and/or health services access. Data were extracted and organised into an Excel document by study design. The limitations of each study were recorded during this process. Because of the considerable heterogeneity of methods and outcomes, a narrative synthesis approach was used following guidelines by the PRISMA-extension for Scoping Reviews [28]. Results were then analysed thematically [29] with an inductive approach to identify important themes whereby findings from the included papers were used to develop themes, which were then applied onto the concept map (Figure 1). Barriers were described at the individual and family level (e.g., socio-demographics, fear), community level (eg, transportation limitations and poor housing conditions) and systems level (eg. policies, insurance, affordable housing, health care access).

RESULTS

A total of 3253 articles published between January 1, 1980 and June 23, 2020 were identified. 753 duplicates were removed leaving 2500 records to be screened. Of those, 98 full-text articles were retrieved and assessed. Articles were excluded (n = 69) for reasons including: the full text was not available (n=13); the study did not involve U5s and/or their parents or did not specify the age of the children in the study (n=13). U5s were rarely studied as a discrete group and often combined with older ages (e.g., ≤ 25 years), and some results were not age-stratified. If the ages or age groups of the sample were not specified, the studies were also excluded (n=21) (Figure 3).

Twenty-nine full texts were included in the final synthesis, including 21 primary research studies and 8 systematic or narrative reviews of primary research studies from HICs (Table 2).The most commonly used study designs according to the CATS classification was a cross-sectional design (n= 13), followed by case studies, case reports, traditional literature reviews, and theoretical papers (n= 9) (Table 1). The majority of the included studies were based in the USA (n=17) and conducted prior to the year 2005 (n= 14); this trend was also present throughout the literature and aforementioned database results which were excluded. The limitations of each study are reported in Table 2.

The themes identified in these domains (individual and family level, community level and systems level) are illustrated in Figure 4. A key finding was that the barriers contributing to poor health outcomes in U5s were intricately complex, with some barriers overlapping between circles of the Venn diagram because these barriers considered influential in more than one area (Figure 4). In addition, a small number of barriers overlapped across all three levels highlighting how homelessness is multi-dimensional, namely poverty, transitory lifestyle (e.g., frequent instability and changing status) and heightened mobility (e.g., short-term residencies).

Individual and family level

At the individual and family level, variables included biological, cultural, and economical.

Common Health Issues

In a review, all of the disorders studied were more common among homeless children, often occurring at double the rate observed in the general paediatric caseload.(30) The most common disorders among homeless children were upper respiratory infections (42% *vs.* 22% in the national sample), minor skin ailments (20% *vs.* 5%), ear disorders (18% *vs.* 12%), chronic physical disorders (15% *vs.* 9%), and gastrointestinal disorders (15% *vs.* 4%) [30]

For example, in a case study of 72 homeless families at a day care at a New York welfare hotel (USA), three-fourths of children initially presented with developmental delays and deviations especially impulsivity and speech delay [31]. In the Children's Health Watch Study using data from five US cities, homelessness during infancy was associated with higher adjusted odds of fair or poor infant health (adjusted odds ratio [AOR] 1.71; 95-percent confidence interval [CI] 1.18, 2.47; $p < 0.01$) and developmental risk (AOR 1.62; 95-percent CI 1.04, 2.53; $p = 0.03$) [32].

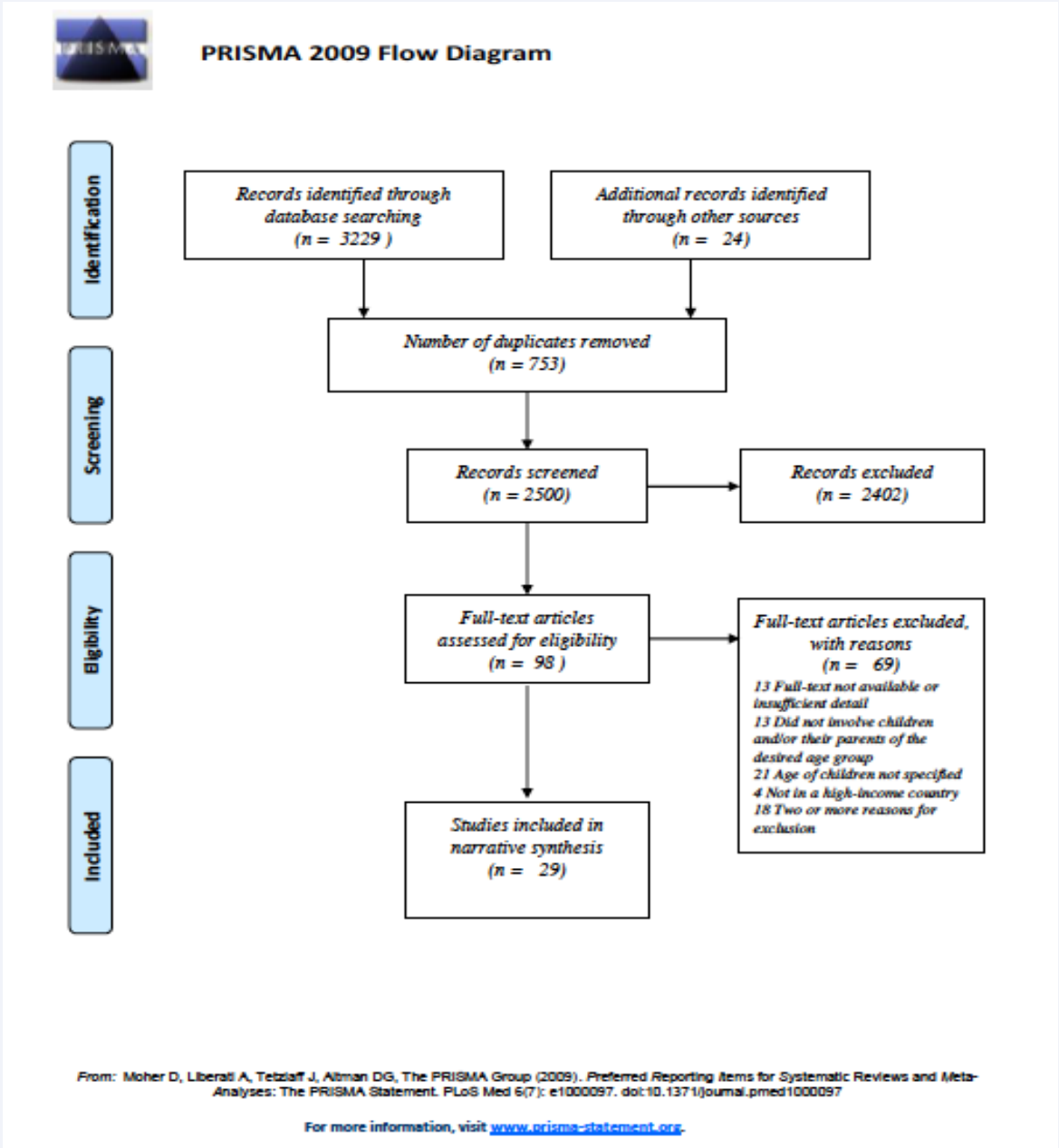

Figure 3 PRISMA Flow Diagram.

Common nutrition-related problems that were more prevalent among homeless children included more gastrointestinal ailments (e.g. diarrhoea and asymptomatic enteric infections), dental problems, nutritional deficiencies (overweight, chronic and acute undernutrition), and lead poisoning [33]. A review found that prevalence of anaemia in homeless children with the majority under the age of six years varied among studies from 2.2% to 50%. Furthermore, anaemia was almost twice as prevalent among homeless children as it was among standard reference populations or housed comparison groups [33]. In a cross-sectional study of 801 homeless families in the Paris region (France), malnutrition was a major problem: the high prevalence of food insecurity (77% of parents and 69% of children), overweight (38% of mothers and 22% of children) and obesity (32% of mothers and 4% of children) [34]. Anaemia was detected in 39.9% of the children and 50.6% of the mothers, and moderate-to-severe anaemia (MSA) in 22.3% and 25.6%, respectively. In the 0.5-5 years group, it was also positively associated with child food insecurity, no cooking facilities and household monthly income [35].

Parental Factors

A systematic review of thirteen qualitative studies, all-originating from the USA, identified suboptimal parenting behaviour in homeless families with children ages 0-17 years as compounded developmental risks [36]. From a parental standpoint, the barriers to optimal health and health services

Table 1: Methodological appropriateness.

Design	Level	N (included texts)
Systematic review or meta-analysis of randomized controlled studies	AA	0
Systematic review or meta-analysis of non-randomized controlled and/or before-after studies	A	2
Randomized controlled study		
Systematic review or meta-analysis of controlled studies without a pretest or uncontrolled study with a pretest	B	1
Non-randomized controlled before-after study		
Interrupted time series		
Systematic review or meta-analysis of cross-sectional studies	C	4
Controlled study without a pretest or uncontrolled study with a pretest		
Cross-sectional study (survey)	D	13
Case studies, case reports, traditional literature reviews, theoretical papers	E	9

Table 2: Descriptive Characteristics of Included Studies.

Author	Study Design (CATS appraisal)	Country	Sample/Population	Age of Children	Barriers (Characteristics)	Limitations
Croft et al. (2020)	E (case study)	UK	33 people living in temporary accommodation in the London Borough of Bromley 23 health and community care practitioners	0-18 yrs	• Very poor diet- no fruits or vegetables; • Parental mental health • Distance and travel • Feelings of being powerless in the current system • Poor literacy and numeracy skills • Short-term support • Past trauma • Inappropriate support leading to a 'vicious cycle' • Lack of coordinated care among the council housing team with health and children support services	• Small survey number; difficult to see the differences in baseline characteristics to the overall local population • Bias from the introduction of food vouchers as incentives • Reliance on self-report can impact on information regarding health need, such as alcohol and drug consumption • Self-report- participants may find it difficult to admit to the problems they are experiencing e.g. caring responsibilities
Bradley et al. (2017)	C (Systematic review or meta-analysis of cross-sectional studies)	UK	Parents of homeless children	0-17 yrs	• Feelings of failure and shame • Reduced parental authority • Feeling "watched" and judged by staff • Cultural differences between parenting style and shelter rules • Threat of removal of children by social services • Daily hassles • Inability to afford transport • Parental exhaustion, "burnout", lack of emotional availability for children, • Difficulty navigating services and working with government agencies • Lack of safe space to play • Unrealistic and non-age appropriate expectations • Fear of danger from other shelter residents	• Larger sampling frames • Mentioned Crisis definition of homelessness but did not say exclusively how they defined it • Generalizability limited because of differences in social welfare provision in international contexts

Author	Study Design (CATS appraisal)	Country	Sample/Population	Age of Children	Barriers(Characteristics)	Limitations
Victor et al. (1989)	C (controlled study without a pretest)	UK	a) 1563 inpatients-inpatient admission; b) 1379 attendances at paediatric clinic; c) 1147 attendances at the casualty department; homeless families by comparing the use they made of hospital services with that made by local residents	0-14 yrs	• unlikely to be registered with GP due to lack of non-temporary house address or difficultly getting registered if still registered in another borough; • need to rely on acute emergency services • budget constraints	• Could not calculate age specific admission rates because there was no detailed demographic information about the population living in hotels. • As noted by authors, there is no accurate denominator for the size of the homeless population, these rates must be interpreted with caution.
Bassuk et al. (1990)	E (case study, literature review)	USA	Sheltered Mothers and Children	Approximately two-thirds of the children were preschoolers, five years or less	• Incomplete education • Lack of occupational skills • Marital or relationship status • Housing history • Income level • Inadequate support • Isolation • Living alone • Maternal mental health • Chronic and acute illnesses of mothers • Disruptive environment • Transient lifestyle • Immunization delays • Chronic physical disorders • Poor nutritional status • Lead poisoning	• No details on analyses done • No visual infographics or data tables • Difficult to connect data throughout study to literature data • Difficult to distinguish what was "new" analysis and what was done previously in their past studies
Author	Study Design (CATS appraisal)	Country	Sample/Population	Age of Children	Barriers(Characteristics)	Limitations
Agustin et al (1990)	E (review)	USA	Homeless Children	Varied; ages 1-5 yrs separated	• Unfamiliar with their neighborhoods • Lack of transportation and childcare • Overwhelmed with frequent changes in shelters • Daily searches for affordable food • Periodic attempts to find housing • Unable to seek medical attention except for emergency care • Immunization delay • Confined spaces- limited opportunity to develop gross motor skills	• Did not compare studies • Not a formal systematic review; search strategy not provided • No tables or figures to illustrate any of the points
Riley, Johnson and Pearson (2001)	D (cross-sectional)	UK	65 residents living in hostels: 34 residents under 18 years old were living in the hostel and of these, 26 were under 5 years of age	under5s and under18s	• No privacy • No safe area and room to play • Shared washing and cooking facilities • Unhealthy diet • Stress	• Socio-demographics not reported • The aim of study was to develop a demographic profile but did not report race or ethnicity
Author	Study Design (CATS appraisal)	Country	Sample/Population	Age of Children	Barriers (Characteristics)	Limitations

Wiecha et al. (1991)	E (literature review)	USA	Single adults: late 20s to 30s Families with children: parents, mid to late 20s; children, 50 percent younger than 6 years, 67-92 percent younger than 5 years	younger than 6 yrs	• Lack of medical insurance or money • Lack of transportation • Mistrust of hospitals and health care providers • Belief that conditions are not serious enough to warrant intervention • Inability or lack of desire to participate in therapy owing to mental illness • Some providers are reluctant to treat the homeless • Medication adherence because of inability to obtain or store medications, or because of the lack of privacy for using them	• Studies found did not use representative samples and did not validate self-reported nutrition and health data • Review methodology was not documented e.g. search criteria etc. but did a thorough outline of study characteristics they found
Parsons (1991)	C (controlled study without a pretest)	UK	Hackney and Tower Hamlets- 4 groups: Born and bred Moved in Finsbury Park residents Tower Hamlets residents	infants and under5s; school aged children	• Living in temporary accommodation for extended periods of time • Low birthweight • Limited mobility in terms of access • Cultural values • Overcrowded housing • Theoretical barriers related to housing- diet, damp, stress, lack of sunlight, susceptibility to infections, depression and even genetic selection	• Had 3 "control groups" - not really controls but comparison groups; • The MCW 46 forms are designed so that the examining Doctor only has to tick the relevant findings in the physical examination at various ages. • Retrospective data collection from medical records: for example, incomplete data e.g. some variables such as maternal age, socio-economic class, mother's marital status and father's occupation
Rafferty, Y., & Shinn, M. (1991).	E (literature review)	USA	Homeless children and families, a population that typically receives transitional housing in family shelters in the US	Varied- under 18; of interest - under5s	• Inadequate shelter conditions • Instability in residences and shelters • Inadequate services • Barriers to accessing services that are available	• No visuals or tables • Inconsistent findings across tables • Search criteria and research methodology not provided
Author	**Study Design (CATS appraisal)**	**Country**	**Sample/Population**	**Age of Children**	**Barriers(Characteristics)**	**Limitations**
Redlener, I., & Karich, K. M. (1994).	D (cross-sectional)	USA	9,200 homeless children; July and October of 1992. from 79 shelters and welfare hotels	Varied but separated 0-5 age group	• Availability of health care resources • Ineffective referral linkages; • Health linkages between moving accommodations • Poverty • Dearth of primary care resources available in the majority of areas where homeless facilities are located, • No way to ensure access to appropriate health care (Medicaid)	• Reported age groups but nothing further broken down by age • No demographics e.g. household size etc.
Wagner, J. D., Menke, E. M., & Ciccone, J. K. (1994).	D- (cross-sectional)	USA	76 rural mothers with children younger than age 13	A family was defined as a mother who had at least one child younger than 12 years of age staying with her.	• Lack of availability, accessibility and acceptability of mental health care in rural areas • Threats to self-sufficiency and self-reliance	• Self-report; no validation (except for the SCL-90-R) such as actual mental and physical health assessments of the subjects • Some interview questions in the interview schedule were not specific enough e.g. type of drugs use or amount consume • Small sample size • No comparison group

Author	Study Design (CATS appraisal)	Country	Sample/Population	Age of Children	Barriers(Characteristics)	Limitations
Burton, G., Blair, M., & Crown, N. (1998).	E (case study)	UK	A group of five-year olds who had experienced homelessness and compare them with matched `non-homeless' controls	5-yr olds	• High mobility of the populations • difficulties in accessing medical records • Access to appropriate health visiting services • Difficulties in obtaining emergency treatment • Difficulties travelling to the surgery • Difficulty accessing services in their `homeless' residences because likely to have kept registration with original doctor • Overcrowded living conditions • Moving house number of times, registered as homeless multiple times • Reliance on hospital services and accident and emergency treatment • Child injury mortality rate • Low immunisation uptake	• Difficulty in selecting the controls e.g. there was no way of telling from the records whether that child had experienced homelessness • Measuring morbidity at the school health interview was subjective because it relied on a school nurse interview but not using standardised measurement tools • Recall bias- the parental perceptions of the child's health were not validated • May have been confounding variables that could have impacted study e.g. whether some children had been permanently housed, moved many times, changed their name or moved out of town after discharge from the homeless register
Kidd, S. A., & Scrimenti, K. (2004).	D (cross-sectional)	USA	170 homeless families in New Haven	< 17 years	• High levels of service needs in all areas, • Basic needs requirements not met (food, shelter, clothing)	• No visual presentations of results- difficult to follow the material • Missing data for various questions ranged from less than 1% (survey location) to nearly 100%. Information most affected by missing data included variables related to service needs, such as substance abuse or mental health services, town of origin, and last known residence
Author	Study Design (CATS appraisal)	Country	Sample/Population	Age of Children	Barriers(Characteristics)	Limitations
Menke, E. M. (2005).	C (systematic review of cross-sectional studies)	USA	Homeless children	Not predefined; results varied from ages 4-16 yrs	• Having no place of their own is detachment from themselves and others and living a discordance with unfamiliar patterns • Constant changes in the shelters • Feeling uncomfortable • “Disturbing uneasiness of aloneness with togetherness amid longing for personal joyful moments”	• Under 5s not studied exclusively; range of age groups; did not exclusively define children's ages • Outcome measure wasn't clear (vague)

Grant, R. (1991)	E (case study)	USA	72 homeless families, and 87 homeless pre-school children, in day care at a large welfare hotel.	2-5 yrs	• Severe environmental stress and limitation (e.g. full housing history) • Age upon entering shelter-ing system • Lack of continuity of health care • Lack of continued monitor-ing of child abuse cases was impossible because no poli-cies in place to facilitate this necessary function • Shelter and welfare hotel conditions • Lack of a "safe space"	• Didn't have housing history • Collected demographics, but didn't present it in a clear way; would have been helpful if they had collected migration data, im-migration status (e.g. access to aid), pathways to homelessness • No formal research protocol during 15-month study
Sleed, M., James, J., Baradon, T., Newbery, J., & Fonagy, P. (2013).	B (inter-rupted time series)	UK	Fifty-nine mother–baby dyads participated in evaluation, 30 in the intervention hostel group and 29 living in comparison hostels.	Mean age reported 8.5 (4.4) months total sample	• Parental distress and be-haviour, • Parental depression and anxiety • Environmental changes • Feelings of isolation • Lack of a support network • Broken relationships, fam-ily breakdown, or, especially in the case of refugee fami-lies, dislocation, violence, or loss	• There were number of con-founding factors in this study • The BSID measure may be sub-ject to variability, depending on the state of the child at the time of the assessment • Quasi-experimental design was used and the researcher who conducted the assessments was not blind to treatment group • Did not report inclusion/exclu-sion criteria in recruitment proc-ess at hostels
Author	**Study De-sign (CATS ap-praisal)**	**Coun-try**	**Sample/Population**	**Age of Chil-dren**	**Barriers (Characteristics)**	**Limitations**
Shinn, M., Samuels, J., Fischer, S. N., Thompkins, A., & Fowler, P. J. (2015).	A (ran-domised con-trolled trial (RCT) ; comparison group- usual care)	USA	200 newly homeless families (and 311 chil-dren) in which mothers had diagnosable mental illness or substance problems.	1.5–5 years, 6–10 years, and 11–16 years	• Continuity of services • Transfer to Care, the case manager reduces contact further, as families are encouraged to take full responsibility for accessing services	• Small sample size- small num-bers of children in each of the three age groups; might have been better to have a larger sample size and focus on one age group • Findings restricted to families in which the mother has a men-tal illness or substance problem
Benbow et al. (2019)	E (critical narrative study; a criti-cal feminist perspective)	Canada	26 mothers experienc-ing homelessness 15 service providers who provided care to mothers experiencing homelessness	majority of children were < 5 yrs (60%)	• Lack of access to resources and services. • Difficulty navigating the system • Internalized expectations and regulations • Hierarchy of exclusion • Feelings of shame and blame; being a good enough mother; and despair and defeatedness	• Restriction to an English-speaking population • Challenges of following up with second interviews due to changes in accessibility and complexity of life situations
Brown and Chatterjee (2018)	E (literature review)	USA	50 to 280 participants	< 13 yrs	• Lack of access to cooking & storage resources in shelter environment • High cost of healthy foods • Little access to healthy eat-ing options	• The majority of studies were cross-sectional using conven-ience samples
Author	**Study De-sign (CATS ap-praisal)**	**Coun-try**	**Sample/Population**	**Age of Chil-dren**	**Barriers (Characteristics)**	**Limitations**

Buu et al. (2014)	E (case study)	USA	Caregivers (sheltered parents)- all spoke fluent English,racially and ethnically diverse, ages 31-53 years with majority of children enrolled in medicaid and shelter staff	19 months- 24 yrs	• Transportation • Time • Smoking in the environment • Staff and parents didn't have adequate training on asthma (such as triggers) and medication use; • Lack of availability to get to pharmacy (both distance and out of hours)- don't have what they need in stock • Difficulty getting what they need during an emergency; • Need more access to an advice nurse during stays in shelter; • Lack of connection with a primary care provider; • Smoking on shelter property- asthma trigger	• Small number of participants in the focus groups • May not be generalizable to other settings with differing demographic profiles • Data on the duration of asthma of each child was not collected
Chatterjee et al. (2017)	D (survey, cross-sectional)	USA	169 organizations that provide services to children funded by the Health Resources and Services Administration's Health Care for the Homeless Program	< 18 yrs-25 yrs	• Lack of time, knowledge, and local/state resources • Immigration status • Barriers to meeting recommendations • Lack of care plan integrating comprehensive and acute care	• low response rate for survey completion • Survey was based predominantly on self-report measures • Generalizability of findings limited given use of the HRSA HCH grantees list to recruit participants e.g. While researchers specified that they were interested in the care of young people under 18 years of age, some homeless youth service providers served those up to age 25 and may have included services for young adults in their responses
Author	**Study Design (CATS appraisal)**	**Country**	**Sample/Population**	**Age of Children**	**Barriers (Characteristics)**	**Limitations**
Edwards et al. (2017)	D (descriptive; cross-sectional; qualitative)	Canada	9 mothers: 24 years of age or younger of a single infant 6 months of age or younger	< 6 months	• Inadequate prenatal information • Challenges of early breastfeeding • Family influence and peer support • Maternal mental health • Importance of early postpartum support • Importance of ongoing support	• Small sample size; • Convenience sampling including those were those who self-selected to participate and were accessing services; these young mothers had primarily positive experiences with the services and included only those who initiated breastfeeding

Jetelina et al. (2018)	D (cross-sectional)	USA	6492 primary caregivers of children in five counties of Dallas, Texas	0-17 yrs	• Lack of insurance acceptance or affordability; • Family's inability to access clinical care during convenient hours; or not knowing • Where to get healthcare services • Household primary language • Unmet mental healthcare needs • Housing instability	• External validity of findings is limited, as participants were only residents of five urban counties in the United States and the survey • Cross-sectional study design, so unable to determine whether familial homelessness preceded unmet healthcare needs. • Time parameters for unmet mental and physical healthcare needs differed (lifetime vs. 12 months) • Homelessness and unstable housing history were dichotomized using a single-item, which fails to include frequency, duration, or type experienced.
Reilly et al. (2018)	D (cross-sectional)	USA	NYC homeless shelter residents and public housing residents	< 6 yrs	• Young age of mothers • Race and ethnicity • Place of birth (Shelter-born) • Breastfeeding • Lack of income	• The analysis was exploratory and descriptive • Did not control for any confounding or effect modifying variables • The cross-sectional design did not allow for examination of temporal relationships • Possible variability in registry data e.g. birth certificate, address data
Author	**Study Design (CATS appraisal)**	**Country**	**Sample/Population**	**Age of Children**	**Barriers (Characteristics)**	**Limitations**
Luchenski et al. (2018)	A (systematic review)	UK	People with experience of homelessness, substance use disorders, imprisonment, or sex work in high-income countries	<25 yrs	• Fear • Poor awareness and judgmental attitudes of services • Restrictive requirements to access services (eg, proof of address or proof of benefits) • Language, communication, and cultural barriers • Negative stereotyping by the media • Stigma and public misconception • Geographical lottery and health service funding controls access • Services prioritise certain groups over others (eg, difficult to get housing support as a single working-age male) • Difficulties in maintaining hygiene and resultant body odour • Legal status, immigration, or asylum • Scarcity of information, poor knowledge • Care avoidance	• Didn't specifically focus on families or potentially issues under5s may face although they were included • Limitation of literature- the breadth and diversity of interventions- could only use narrative approach

Murrell et al. (2000)	D (cross-sectional)	USA	Women enrolled in the project ages 15-40 years who were pregnant or parenting an infant six months old or younger (N = 79)	< 6 months	• Temporary or insecure housing, • Unemployment • Child care • Family stability, • Shelter • Food • Trust	• Nonexperimental study • Survey mainly used in evaluating the AfterCare Project program and to plan for future provision of services
Author	**Study Design (CATS appraisal)**	**Country**	**Sample/Population**	**Age of Children**	**Barriers (Characteristics)**	**Limitations**
Vandentorren et al. (2016)	D (cross-sectional)	France	A random sample of 801 homeless families homeless sheltered families in 2013; ENFAMS Survey	< 13 years old	• Housing instability •Sustained episodes of homelessness • Food insecurity • Maternal mental health • Migration status • Single parent with children	•No control or comparison group to look at housed families with low income •No follow-up
Arnaud et al. (2017)	D (cross-sectional)	France	A random sample of 801 homeless families homeless sheltered families in 2013; ENFAMS Survey	Two stratified child age groups; 0.5–5 and 6–12 years old	• Type of accommodation • Mother's administrative status (e.g. migration) • Food insecurity • Duration of breastfeeding • Living Conditions • Access to Cooking Facilities • Language barriers • Household Income • Duration of Homelessness (Years)	•As stated by authors, the indicator food insecurity, which retrospectively encompasses an individual's physical, social and financial dimensions during the 12 month-study, is likely to be a better proxy for social disadvantage and malnutrition than the 'diversified' dietary pattern which they measured cross-sectionally, and consequently proved more useful for identifying epidemiological associations
Cutts et al. (2018)	D (cross-sectional)	USA	Children's HealthWatch Study 9,980 mothers of infants younger than 12 months were surveyed at emergency departments and primary care clinics in five U.S. cities	< 12 months	• Food insecurity • Maternal mental health • Household-level hardship • Lack of health insurance • Type of accommodation • History of homelessness	Did not consider duration, whether the family was homeless once or over multiple periods of time, type or quality of alternative living arrangements for homeless families, Did not collect information on other known risk factors of poor health outcomes that are more prevalent among homeless families compared with consistently housed families.

access for U5s included feelings of failure and shame, reduced parental authority, feeling "watched" and judged by staff, cultural differences between parenting style and shelter rules, fear (e.g. threat of removal of children by social services or danger from other shelter residents), parental exhaustion or "burnout" (e.g. lack of emotional availability for children), and unrealistic and non-age appropriate expectations [36]. However, parents were able to utilise adaptive strategies to mitigate the challenges presented by homelessness such as positive reframing, valuing the parental role and spirituality to manage their parenting stress, as well as practical strategies such as reading, writing in a journal and staying focused on long term goals [37].

In comparison, a descriptive case study on 80 families and 156 children residing in Massachusetts family shelters [38,39] found socio-demographic barriers including family characteristics and structure, parental income and/or occupational status (i.e. unemployment or no right to work), low parental education, young age of mothers, race, ethnicity, language and literacy skills and more [38]. Fear, trauma, shame, blame and guilt were prominent themes in other studies; fear, on its own, was a significant barrier to accessing health services and essential resources: fear encompassed, fear of partner violence, police, community stigma, judgmental attitudes, repercussions for reporting domestic violence and/or assault, losing custody of children and social exclusion [36,40]. Across five US cities, compared with consistently housed mothers, mothers with a

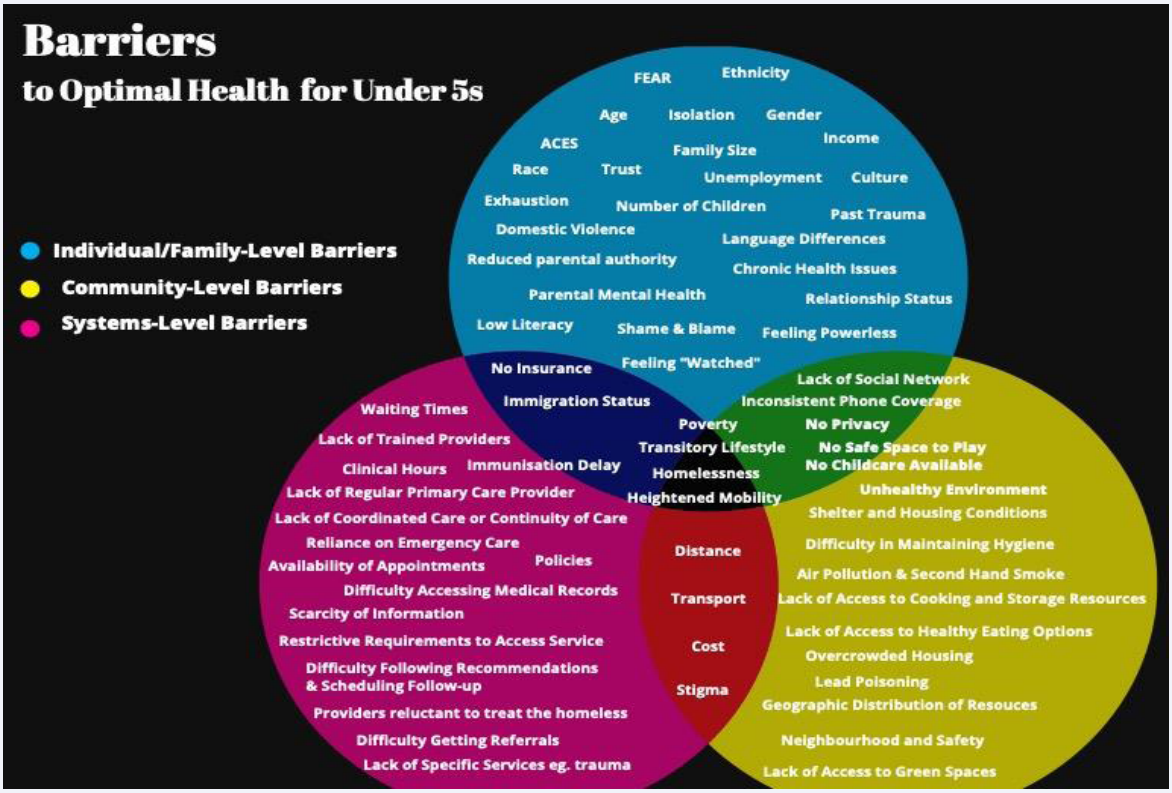

Figure 4 Barriers to Optimal Health for Under 5s.

history of homelessness had higher adjusted odds of fair or poor health and depressive symptoms [32]. High rates of depressive disorders were found in 30% of homeless mothers and 20% of children had signs of possible mental health disorders. In addition, most families had experienced housing instability and 94% were living below the poverty line (828 euros/month) [41]. Some social barriers tended to overlap between the individual/family and community levels including stigma, media portrayal, inconsistent phone coverage and social capital.

Community level

At the community level, barriers existed within both the neighbourhood and housing environments. The community level explored settings (e.g. neighbourhoods, workplaces, schools) in which social relationships occur and the characteristics of these settings [42] Together, these relationships and settings interacted with both the social and physical environments [43]. Regarding dietary inadequacies, barriers in both environments included lack of access to cooking and storage resources in shelters, high cost of healthy food and little access to healthy eating options in addition to scarcity of resources around nutritional intake [44,45]. Unhealthy and polluted neighbourhood and housing environments also acted as barriers to optimal health for children. More specifically, indoor and outdoor smoking was a problem, even on shelter property, which contributed to second-hand smoke and asthma triggers among children [46]. Lack of basic amenities, privacy and difficulty maintaining hygiene were also argued as inevitable obstacles [47].

In the housing environment, additional barriers included poor quality housing, overcrowding, type of temporary or insecure housing (e.g. B&B, shared rooms) and hostile neighbours or flatmates/housemates [48]. Studies reported participants living in temporary or insecure accommodation for extended periods of time, which also contributed to poor health and health services access [49,50]. In a UK case study of homeless five-year olds, which were compared to non-homeless controls, 80% of the homeless children had experienced overcrowded living conditions and had moved more than four times compared to controls. In addition, nearly 50% had registered as `officially homeless' more than once (e.g. transitory lifestyle), and 65% of families had reported not seeing a health visitor [50]. In infants and schoolchildren living in temporary accommodation in Hackney and Tower Hamlets, Parsons (1991) found housing-related barriers such as overcrowding, limited mobility in space, and acknowledged the theoretical barriers related to housing including diet, damp, stress, and lack of sunlight, susceptibility to infections, depression and even genetic selection. Among infants, 25% of babies living in Bed and Breakfast (B&B) hotels were born with a weight < 2,500 g. [49]. Similarly, babies born to mothers living in New York City shelters were more likely to have low birth weight (< 2500 g), be born preterm (< 37 gestational weeks), require assisted ventilation immediately following delivery, have a NICU admission, and use Medicaid [51].

Shared washing and cooking facilities were noted as barriers by spreading infection and encouraging an unhealthy diet. A cross-sectional study of 65 residents from three council hostels providing temporary accommodation for homeless families found the most drastic dietary results in U5s (n=26) were only

18% had the recommended 4 servings of fruits and vegetables per day and only 45% had the recommended 4 servings of starch (bread, cereals and potatoes) per day [45]. Some barriers that overlapped at community and systems levels included distance (e.g. geographic distribution), transport and cost to accessing resources and services among others.

Systems Level

Systems-level barriers existed in the form of policies and the access to health resources and services. Difficulty navigating the system [40] was among the most common barriers including waiting times, clinical hours, availability of appointments, difficulty scheduling follow-up, lack of coordinated care, age cut-offs for infant services and lack of specific services (e.g. HIV+, violence/trauma counselling, drug treatment support) [52]. From an infrastructural standpoint, there were restrictive requirements to accessing services such as proof of address [47], which would be difficult to provide given the transitory lifestyle of homeless populations. Homeless populations were reported to lack insurance or an integrated comprehensive care plan, have difficulty getting what they need during an emergency (e.g. pharmacy) as well as having a scarcity of health information, which oftentimes led to overreliance on acute care services [44,53]. Among 6492 primary caregivers of children ages 0-17 years in Dallas (US), unmet health care needs were characterised by the following six reasons or barriers to accessing health services: (1) could not afford health services; (2) not covered by insurance; (3) did not know where to get help; (4) could not find a health professional who accepts Medicaid/CHIP; (5) inability to access care during convenient hours (i.e. weekend or evening); and (6) other reasons [53].

For example, Redlener, I., & Karich, K. M. (1994) found that available health care resources varied considerably throughout the shelter system and that nearly 50% of homeless children in New York City (USA) did not have access to appropriate medical care. The majority (53%) of homeless children at the time of the Homeless Child Health Care Inventory (HCHI) were under 5 years of age with a significant proportion (25%) younger than 2 years [52]. A survey of 170 homeless families, primarily who were "couch hopping"/living temporarily with friends or family (52%) or living in a shelter (41%) in New Haven (USA), showed high levels of service needs in all areas, and basic need requirements being unmet (e.g. food, shelter, clothing) [54]. Additional evidence was collected by comparing homeless families' use of hospital services with that made by local residents of Paddington and North Kensington (UK) [55]. Homeless children living in hotels were significantly more likely to present with an infection (118; 57%) than local children (332; 42%). A total of 1147 attendances at the casualty department were recorded: 479 (42%) residents and 56 (5%) patients from hotels (3-8 per 1000 and 10 per 1000 respectively). The patients from hotels were significantly younger than the residents and less likely to be registered with a general practitioner [55].

DISCUSSION

Although evidence is not extensive, homelessness and the barriers that it creates have profound and long-lasting effects on child health. Poorer health outcomes (e.g., respiratory infections, anaemia, and asthma) and poor health services access (e.g., vaccine delay, lack of specific services such as trauma care) were commonly identified across studies. A wide diversity of barriers to healthy child development, health care access, and other relevant services were identified. A notable finding was that barriers overlapped between levels-there was a snowball effect: system-level barriers resulted in community- or individual/family-level barriers. For example, policies regarding housing and suitable accommodation (systems level) were directly linked to families being placed in temporary or insecure accommodation, which were either of poor quality or overcrowded (community level), subsequently impacting the health and wellbeing of the child as well as the caregivers (individual/family level). In addition, we found examples of barriers, which were contextually-bound. Many US studies referenced a lack of insurance or comprehensive health plan as system-levels barriers. This was not found in studies conducted in the UK where there is universal health coverage, although this does not apply to individuals who have no recourse to public funds (NRPF), such as refugees and asylum seekers. Despite the high rates of child homelessness in the UK and low ranking of child health well-being indicators as compared to other HICs [7,8], there were fewer UK-based studies.

Our findings confirm and extend previous reviews by focusing on U5s in temporary or insecure accommodation, a population that is often left invisible in the eyes of the public, government and research community, which added strength and uniqueness to this scoping review. We focused on primary research studies or reviews of primary research studies; however, the main limitation in most reviews was the lack of details related to the study methodology e.g., protocol, search criteria, number of included articles. Therefore, we could not verify what standardised research procedures/guidelines were followed e.g., PRISMA. Although the CATS Framework was limited, it was best suited for the broad scope and specific sample with a rigorously applied eligibility criteria. Importantly, this allowed for a balanced assessment of what is known or not known in the scientific literature using a systematic methodology. A limitation of the review was the inability to retrieve all articles, especially those over 30 years old when a significant number of primary research studies were published. This review found similar barriers across the included texts, but a meta-analysis was not possible because studies differed in measures and definitions of homelessness. Likewise, information on barriers varied in format and structure, making a systematic review difficult to implement, leading to a scoping review being selected. In primary research studies, there were limited findings that related to the broader health and social policies such as Medicaid programs, affordable housing and housing support. Furthermore, U5s were not studied as an independent group from other children, so the importance of the early formative years became an evident gap in the literature.

An important finding from this review was the variable quality of the included studies. Quality appraisal identified that more methodologically rigorous research is needed to identify what barriers exist for U5s and their parents in accessing health services, and how this affects the child's and caregiver's health. Some studies did not use representative samples, used sample sizes with convenience sampling and did not use "true" controls

but rather comparison groups. Many quantitative and qualitative studies did not include socio-demographic data (e.g., age, household structure, education, disability, immigration status) or analysed it in relation to ethnicity or subpopulations, which is important to determine which priority groups are most at risk.

A variety of outcome measures were used including the Bayley Scales of Infant Development, Homeless Link Homeless Health Needs Audit survey, Homeless Child Health Care Inventory, Child's Health Assessment and Planning Survey, Symptoms Checklist-90-R and Hospital Anxiety and Depression Scale (Supplemental Material, Table 3). Studies measured similar health outcomes however, only some used validated measures. The lack of standardised measures makes comparisons across timeframes, locations, populations and policies exceptionally difficult. Such differences are also problematic because it limits the ability to look at improvement over time in priority areas in HICs. A recommendation is that future studies adopt a standardised toolkit to measure the health and well-being of homeless families including children and all household members so that the results can be compared across studies. In April 2020, the Children's Commissioner for England called for better ways of collecting "real-time data" since lockdown had removed the usual ways of identifying at-risk children [58]. Better-quality data, including the introduction of more health indicators that are measured on a more regular basis, to reflect the age and growth periods of a child, can then inform what area of government is accountable and which areas of child services need more funding. These data are vital because they will also be measures of inequalities and inequities.

Currently, there is no universally accepted definition of homelessness [59], which potentially impacts data comparability. We found that every study used a different definition of homelessness, which was possibly due to the socio-political context of the topic but demonstrated the need for application of standardised definitions of homelessness and reporting of findings according to different types of homelessness (Table 3). This limited the ability to make international comparisons across studies including risks and rates. Definitional differences have been found to drive variation in incidence rates of homelessness across countries even for the same territories because different definitions of homelessness can exist in the same country depending on the purpose and the collecting authority [11]. Another crucial observation was that studies did not define the term *access* in relation to health services or use a working definition. Moving forward, it is important to design studies collaboratively across sectors (e.g., academic, non-profit, health, housing, government) using validated, standardised measures and definitions to make the research both generalisable but also have the most potential for meaningful impact rather than different sectors continuing to work independently.

Early childhood education and care in HICs were developed because investment in the early years is more likely to improve long-term health outcomes compared to any other period in a child's life by delivering services designed to foster children's health and wellbeing, social and emotional development, and cognitive learning skills [60,61]. Norway, Sweden, New Zealand and Denmark have successfully implemented such systems [62]. However, systems and programmes such as Sure Start (UK) have been drastically reduced in the wake of national budget cuts. This puts marginalised groups including homeless children on a lower list of priorities in both child care and national agenda setting, thereby reducing the integrated support for children in the early years [62]. In the UK, many families experiencing homelessness are living in a variety of temporary accommodations such as shared accommodation, hostels, B&Bs, shelters, and other council-arranged accommodation because of different policies including Children Act (1989): Section 17, Homeless Reduction Act (2017), Housing Act (2004) and National Asylum Support Service (NASS) [63]. As the majority of studies on homeless children were non-UK based, and took place in shelter settings, there is a need for UK-based research in other settings. This includes research focused on how policy plays a role in the type of accommodation families receive, and how long they stay in that accommodation.

COVID-19 has added a completely new layer of risk and has only amplified the aforementioned pre-existing barriers. Homeless U5s are not only at high risk of exposure and transmission due to overcrowding in substandard housing, but also of immediate and long-term effects on growth, optimal health, and brain development. As seen in the evidence, the issue of child homelessness and poverty and their impacts on health is NOT new: in 1999, Prime Minister Tony Blair pledged to end child poverty over the next twenty years [64]. Sadly, this goal did not come to fruition, as of 2019 and as of 2020, the current pandemic is likely to have worsened both child homelessness, poverty and health, and exacerbated the barriers reported in this review. A systematic review demonstrated that the bulk of literature on the health and wellbeing of homeless children and families was published during the 1980s and 1990s especially in the US. Whilst the policies may still be relevant, the demographics of homeless families have changed considerably over the past thirty years with increasing rates of homelessness among poor and low-income families arguing that family homelessness emerged as "a major social and public health problem in the 1980s for the first time since the Great Depression" [65]. Research is urgently needed to understand how COVID-19 fits into this timeline and whether it will be one of the greatest social and public health problems since the 1918 influenza pandemic when mortality was highest among U5s and whether countries can still meet their 2030 targets for the Sustainable Development Goals [66,67].

CONCLUSION

Although sparse, there is evidence to suggest a series of interacting barriers preventing U5s from achieving optimal health outcomes and accessing health services. More recent evidence is needed to accurately reflect the changing socio-demographic profiles among these vulnerable populations from decade to decade. In addition to research, there needs to be greater emphasis on data collection. As found in this review, U5s were not studied as an exclusive group, which alienated early year's development from the literature. To fill this evidence gap, future research should draw from the barriers identified in this review to develop targeted, co-created studies and interventions with homelessness families of U5s as well as evidence-based policies. Together, these programs and policies can shape how the health

and wellbeing of vulnerable U5s and the next generation adults is measured and assessed. Lastly, it would also be advantageous to examine how these barriers change during the course of the current pandemic as we struggle to define the "new normal" and its future implications.

CONTRIBUTORS

DMR and ML came up with the concept for the manuscript. DMR conducted the search, collected the data, interpreted the data and wrote the manuscript with the help of CL. All authors contributed equally to the direction of the review and final manuscript.

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