Barriers and facilitators to optimising health outcomes and accessing health care services among under 5s experiencing homelessness in temporary accommodation (U5TA) in England: a case study of a local authority in East London.

Diana Margot Rosenthal, MPA, MSc

A thesis submitted for the degree of
Doctor of Philosophy

in

Inclusion Health: Population, Policy and Practice

University College London (UCL)

Great Ormond Street Institute of Child Health

June 2023
DECLARATION

I, Diana Margot Rosenthal, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Abstract

Background: Child homelessness is a growing global public health crisis. These children have a higher life-long risk of developing chronic conditions, repeated cycles of homelessness and adverse childhood experiences. Under 5s experiencing homelessness in temporary accommodation (U5TA) are especially vulnerable because the first five years of life are crucial for optimising growth, health, and ~90% of brain development.\(^1\)\(^2\) However, few studies have focused exclusively on this marginalised group, lacking comprehensive evidence across the various types of temporary accommodation (TA) they can experience.

Aims: To better understand barriers and facilitators to accessing health care services and optimising health outcomes among U5TA in England and the additive impact experience of the COVID-19 pandemic.

Methods: London Borough of Newham (LBN) was the population under consideration because LBN has the highest number of children living in TA (1 in 11) and poverty (1 in 2) in England.\(^3\)\(^4\) I conducted five research phases: a 1) scoping review; 2) community-based study utilising citizen science with mothers of U5TA (the experts by experience); 3) cross-sectional survey of families experiencing homelessness during the pandemic; 4) qualitative study with relevant cross-sector professionals; 5) triangulation of findings to co-develop multi-level recommendations.

Results: Triangulated data identified multiple concurrent housing hazards, which made these unsuitable environments for U5TA and their families, e.g., overcrowding, dampness/mould, poor/inadequate kitchen/toilet facilities, infestations/vermin, structural problems/disrepair, and frigid temperatures. Living in TA was an independent predictor of poor parental mental health: the odds of more severe depressive (OR: 3.14, 95%CI:1.61–6.13) and anxiety (OR: 2.46, 95%CI:1.27–4.75) symptoms were higher for parents/carers living in TA than those residing in non-TA. Additional factors associated with living in TA and poorer mental health included duration of tenure in TA, immigration status, financial and food insecurity, and inadequate housing. Cross-sector professionals described adverse pandemic effects on U5TA—developmental delays and regression. Triangulated data also highlighted that U5TA experienced various...
difficulties accessing health care services due to affordability, availability, accessibility, accommodation, and acceptability, i.e., the 5A’s of access.5–7 Furthermore, the pandemic exacerbated pre-existing systemic barriers by the reduction of in-person services, digital poverty, language discordance, and inability to register and track U5TA, rendering some invisible to services and heightening poor care continuity.

Conclusion: These novel mixed-methods findings demonstrated interrelated, multi-level barriers for this population outweighed the few existing facilitators before and during the pandemic. Results demonstrated that housing is a fundamental component of health care—both are inextricably linked—safe and suitable housing are prerequisites for “optimal health and wellbeing.” Thus, as a first-line response, priority actions should include reducing the time families reside in TA and implementing a child-centred TA Standards Framework. Poor parental mental health and poor child health outcomes were frequently prevalent among U5TA and their families. This necessitates co-located mental health and housing support within settings already accessed by U5TA and trauma-informed care training for all staff working with families in TA. Lastly, service barriers should be addressed through co-produced tailored solutions and policies targeting emergency preparedness and the 5A’s of access including digital exclusion.
Impact Statement

In England, the number of children experiencing homelessness in temporary accommodation (TA) significantly increased by \( \geq 72\% \) in the past decade.\(^8\) This thesis addresses two critical public health issues—barriers and facilitators to optimising health outcomes and accessing health care services for children under the age of five (under 5s) experiencing homelessness in temporary accommodation (U5TA) in England.

Few studies have examined these issues, but none using the combination of mixed methods and the range of contributors and interested parties presented here, including different classes of TA. Thus, this original thesis, conducted before and during the pandemic, is the most comprehensive body of work to date on these issues experienced by U5TA in high-income countries. To my knowledge, this thesis conducted the first research of its kind, working collaboratively with U5TAs’ mothers using citizen science. This research added to the few existing citizen science studies in the public health arena that previously excluded such clinically and socially vulnerable groups from participating due to amplifying digital inequity (e.g., use of smartphones and internet resources).\(^9\) This form of community-based participatory research transcended traditional scientific boundaries by mitigating such barriers and provided a platform for families to use their voices, ensuring that these issues were seen through the lens of those with lived experience first-hand.\(^9\) This citizen approach co-designed a replicable data-collection method, including mobile application surveys shared on ArcGIS. Findings can potentially inform the current review of the national Housing, Health, and Safety Rating System.\(^9-11\)

Through four different methodological studies in a five-phase framework, this thesis demonstrated that multi-level and interrelated barriers to optimising health outcomes and accessing health services for this population currently outweigh existing facilitators. Extensive recommendations were generated using a systematic process by methodological triangulation of key findings and amalgamating all recommendations from experts with lived experience, professionals and myself, the researcher. These recommendations can inform health, social care and housing services for policy change, multisector strategies, and potential interventions tailored to U5TA to intervene and mitigate the short-
and long-term consequences of these systemic, multifaceted and COVID-related barriers. This thesis demonstrated that housing is undoubtedly healthcare\textsuperscript{12}—both are inextricably linked—safe and suitable housing are prerequisites for “optimal health and wellbeing.” Consequently, this thesis produced an evidence-based and child-centred TA Standards Framework that local authorities can holistically tailor into their own frameworks and services using feasibility testing and co-development with relevant partners. Local authorities can then locally implement the framework to ensure all TA provided by the government meets better minimum standards to protect the safety, health and wellbeing of U5TA. Working cooperatively with the London Borough of Newham (LBN) local authority and community, this framework also garnered external interest, including the Department for Levelling Up, Housing and Communities.

I demonstrated thesis impact through outputs with $>7560$ reads and $>90$ citations to date (12 June 2023), including policy briefs, media coverage, six articles and five abstracts published in open-access journals, a book chapter and ten conference presentations, of which I was the first author on six. I was an invited speaker and panellist for multisectoral audiences, including non-governmental organisations, local authorities and central government. My thesis earned four successful grants, including in public engagement. The thesis findings led to a UKRI-funded national study(£522,376.75;Project Reference:ES/V016253/1) that I initiated and conceptualised with support from my supervisors and other academics.\textsuperscript{13} Ultimately, this research was \textit{first} to focus on these barriers and facilitators experienced by U5TA in England with the potential impact of the COVID-19 pandemic using these mixed methods, and bring these issues to the local, national, and global stage. Cross-sector studies soon followed and became in vogue, thus confirming the growing importance of this issue and making USTA more visible.

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<td>Elsevier, Ltd</td>
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<td>c) When was the work published?</td>
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DMR conceptualised the commentary, did the investigation, curated the data from PhD results to write the original draft. DMR reviewed and edited the commentary, with supervision from feedback from all co-authors.

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Chapters 1-7

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<td>Click or tap here to enter text.</td>
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<tr>
<td>d) Stage of publication</td>
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</tbody>
</table>
3. For multi-authored work, please give a statement of contribution covering all authors (if single-author, please skip to section 4):

Research team: Claire Cameron, Hanan Hauari, Katie Hollingworth, Margaret O’Brien, Lydia Whitaker, with Charlie Owen, Sarah O’Toole, Francisco Zamorano Figueroa and Diana Margot Rosenthal. 

Co-Is: Andrew Hayward, Marcella Ucci, Helen Bedford, Josie Dickerson.
DMR: resources, data curation, writing-review & editing.

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Chapters 5 and 7

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| 3. For multi-authored work, please give a statement of contribution covering all authors (if single-author, please skip to section 4): |
Conceptualisation: DMR with input from co-authors. Grant project administration: DMR. Methodology: DMR with input from co-authors. Resources: DMR. Visualisation: DMR. Validation: DMR with input from co-authors. Writing-original draft: DMR. Writing-review and editing: all co-authors. Funding acquisition: all co-authors.

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<td>c) List the manuscript’s authors in the intended authorship order:</td>
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<td>d) Stage of publication</td>
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</tr>
</tbody>
</table>
3. **For multi-authored work, please give a statement of contribution covering all authors** (if single-author, please skip to section 4):

DMR conceptualised the study, did the investigation, curated the data, and administrated the project. DMR and CL did the study methodology and validation. DMR did the formal analysis with supervision from CL. DMR prepared and wrote the original draft of the Abstract. DMR reviewed and edited the Abstract, with supervision from CL and MH and feedback from all co-authors.

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   Chapters 1, 6 and 7

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<td>Supervisor/ Senior Author (where appropriate):</td>
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Candidate: [Redacted]  
Date: 29/05/2023  
Supervisor/ Senior Author (where appropriate):  
Date: 30/05/2023
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1. For a research manuscript that has already been published (if not yet published, please skip to section 2):

<table>
<thead>
<tr>
<th>a) Where was the work published? (e.g. journal name)</th>
<th>Int. J. Environ. Res. Public Health²²</th>
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<tr>
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<td>Click or tap here to enter text.</td>
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<tr>
<td>d) Stage of publication</td>
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3. For multi-authored work, please give a statement of contribution covering all authors (if single-author, please skip to section 4):

<table>
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<th>Contribution Area</th>
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<tr>
<td>Conceptualisation</td>
<td>D.M.R.</td>
</tr>
<tr>
<td>Methodology</td>
<td>D.M.R. with the supervision of A.S. and C.L.</td>
</tr>
<tr>
<td>Validation</td>
<td>D.M.R. and C.L.</td>
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<tr>
<td>Formal analysis</td>
<td>D.M.R. and C.L.</td>
</tr>
<tr>
<td>Investigation</td>
<td>D.M.R.</td>
</tr>
<tr>
<td>Data curation</td>
<td>D.M.R.</td>
</tr>
<tr>
<td>Writing—original draft</td>
<td>D.M.R. and C.L.</td>
</tr>
<tr>
<td>Writing—review and editing</td>
<td>D.M.R., A.S., M.H., M.U., A.H., A.T., M.L., C.L.</td>
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<tr>
<td>Supervision</td>
<td>A.S., M.H., M.U., A.H., and C.L.</td>
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<tr>
<td>Project administration</td>
<td>D.M.R.</td>
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All authors have read and agreed to the published version of the manuscript.

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Chapters 1-3, 6 and 7

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### 1. For a research manuscript that has already been published (if not yet published, please skip to section 2):

<table>
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<tr>
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<th>Archives of Disease in Childhood²³</th>
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<td>BMJ Publishing Group Ltd</td>
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</table>
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Chapters 2, 5-7

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<tr>
<td>b) Who published the work? (e.g. Elsevier/Oxford University Press):</td>
<td>Elsevier BV</td>
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<td>c) When was the work published?</td>
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</table>
3. For multi-authored work, please give a statement of contribution covering all authors (if single-author, please skip to section 4):

DMR conceptualised the review. DMR did the search, narrative review, and wrote the abstract with input from AMS, MH, and ML. All authors have seen and approved the final version of the abstract for publication.

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Chapters 1-7

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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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Publications: Manuscripts, Book Chapters, Abstracts, and Briefs


Rosenthal, D. M. (2022). [Unpublished]. *We are researching. We are Newham. Families in Temporary Accommodation*. The Impact of COVID-19 on Young Families Living in Temporary Accommodation The differences between Newham families living in temporary accommodation compared to those not living in TA.

*There were five other Briefs of these reports, which I contributed work and helped write, but I wrote the TA one alone.*


Presentations: Oral and Poster

Working in Partnership to Tackle Homelessness and Rough Sleeping 2023
“Alleviating Child Homelessness In The UK”

Speaker, Keynote Address

- What policies have implications for children experiencing homelessness, and what is the prevalence of child homelessness @ the global, national, and local levels?
- What does the evidence from mixed-methods studies show?
- What is “The TA Standards Framework”? What is its purpose? How was it developed? How can it be implemented? Why is it important?

2022 Public Health Science Conference (Poster)

RCPCH Conference 2022 (ePoster)
Abstract title: Parental mental health and associations between living in temporary accommodation and socio-political determinants during the COVID-19 pandemic
Abstract ID number: 576
Specialty or Special Interest Group: British Association for Community Child Health
Presenting author: Diana Rosenthal

RCPCH Conference 2022 (Oral)
Abstract ID number: 605
Specialty or Special Interest Group: British Association for Community Child Health
****One of the top 3 abstracts in The British Association for Community Child Health (BACCH), and selected for Oral Presentation***
Presenting author: Diana Rosenthal

Institute of Medical Ethics (IME) Student Conference 2022 (Poster)
Abstract Title: A systematic scoping review of primary healthcare service outreach for people experiencing homelessness
Valeriya Kopanitsa, Stephen McWilliams, Richard Leung, Batsheva Schischa, Shazia Sarela, Sara Perelmuter, Emma Sheeran, Laure Mourgue d’Algue, Guan Tan, and Diana Margot Rosenthal
Won 1st Place

Speaker, Research Presentation for “Research and Innovation in Community Child Health” webinar, Newham SCYPS, East London NHS Foundation Trust 2022

Presenting author: Diana Margot Rosenthal
Won 2nd Place

2021 Public Health Science Conference
Mitigating the severity of child homelessness in the UK: a global mixed-methods systematic review. Kaushik Sarkar, Diana Margot Rosenthal, Daniela Cossio Martinez, Arunima Shrestha, Prof Sushma Acquilla, Nadzeya Svirydzenka, Michelle Heys, Marcella Ucci, Prof Paula Lorgelly, Prof Raghu Raghavan, Prof Rob Aldridge, Prof Monica Lakhanpaul, on behalf on the Champions project.

Speaker, Research Presentation, London Borough of Newham, Local Authority, Priority 1 Meeting 2021

RCPCH Conference 2021 (e-Poster)
Abstract Number: 920
Specialty or Special Interest Group: British Association of Child and Adolescent Public Health
Presenting author: Diana Rosenthal

Speaker, Research Presentation, UCL GOS Institute of Child Health, PPP Engagement symposium 2020
Speaker, Research Presentation, UCL GOS Institute of Child Health, PPP ECR Group 2020

2019 Public Health Science Conference (Poster)
A narrative review of barriers to optimal health and accessing health services for homeless children under 5.

2019 UK Public Health Science Conference (Poster)
Co-production of a research and advocacy agenda for Inclusion Health
Serena Luchenski, FFPH, Chantal Edge, MSc, Niccola Hutchinson-Pascal, MSc, Binta Sultan, MPH, MRCGP, Georgia Black, PhD, Stan Burridge, Luke Johnson, MBBS, Natasha Palipane, MBBS, Diana Margot Rosenthal, MPA, Cassandra Fairhead, MBBS, Emma King, MSc, Dan Lewer, MSc, Velvet Dibley, MA, Zana Khan, MMedSci, Lucie Collinson, FFPH, Neha Pathak, MBBS, Alistair Story, PhD, Prof Andrew Hayward, MD

Speaker and Panelist. Groundswell and The Pavement for 'Women and Homelessness Action Day'- International Women's Day March 2019
Successful Bids/Grant Proposals

UKRI-ESRC, COVID-19 Rapid Response Call, 2020
- Co-Lead in Grant Application Process
- Amount: £522,376.75
- Duration: 18 months
- I (Project Co-Lead) designed and conceptualised the project utilising the same framework and validated measures from the PhD with the support from my PhD supervisors, Professor Lakhanpaul (Project PI), Dr. Heys (Co-I) and Dr. Ucci (Co-I), the project became even bigger, demanding even more expertise from Co-Is outside my supervisory team, so in addition, Professor Lakhanpaul and I recruited a team of Co-I’s based at DMU (Leicester) and UCL who each contributed to the writing of the proposal.
- Title: COVID-19 impacts on children under 5 in temporary accommodation—co-developing solutions from lockdown to the recovery phase—A mixed-methods study

‘Foundation’ Grant, Foundation for Future London (FFL), 2020
- Amount: £4,900.00
- Duration of grant: 7 months
- Project: Walk In My Shoes
This is additional funding to support the original Train and Engage grant with UCL Culture, Public Engagement Unit.
(APPENDIX. PUBLIC ENGAGEMENT.2)

Partners for Health Collaborative Programme involving three funders: London Catalyst, the Hospital Saturday Fund and the Sir Halley Stewart Trust, 2019
- Amount: £6,500.00
- Duration of grant: One year
- For: User-led research in to the barriers and facilitators to accessing health services for parents of under-fives living in temporary or insecure accommodation.

Train and Engage, UCL Culture, Public Engagement Unit, 2019
- Amount: £1,000.00
- Duration of grant: One year
- Train and Engage is a training and funding program for postgraduate research students, who are looking to connect their work with public groups.
- Project: Walk In My Shoes
This project sets out to facilitate a series of creative and collaborative skill-based workshops with mothers of children under age 5 experiencing homelessness and to produce an exhibition promoting public awareness of child homelessness and the challenges encountered in meeting the Healthy Child Programme recommendations when living in temporary accommodation. I will
work together with the local community and mothers to translate the research data gathered through citizen science approaches into a map quilt, creating a visual representation of the barriers they personally face when trying to engage with health care services and supporting their children to meet developmental milestones. These workshops will be hosted at The Magpie Project, Newham, where their children will be in a supportive and safe space as their mothers develop transferable skills to sustain in the long term, as many are currently unable to work due to their immigration status. These efforts will culminate in a week-long art exhibition and programme of talks, as well as further visualisations of the project data produced by local artists in a public space. 

https://www.ucl.ac.uk/culture/projects/train-and-engage
(Chapter 2, Public Engagement Work; APPENDIX. PUBLIC ENGAGEMENT.1)
Acknowledgements

I would like to thank the following people, teams and organisations who supported me during this PhD.

My dedicated and supportive supervisory team:
Dr. Michelle Heys, Professor Antoinette Schoenthaler, Dr. Marcella Ucci, Dr. Celine Lewis, and Professor Andrew Hayward.

Thank you, Pixie, a.k.a. my partner in crime, the best service dog and research assistant I could ask for. I thank my mother Professor/Dr. Robin Mitnick for her unwavering support. I thank my father, Dr. Jesse Rosenthal, for his encouragement.

I graciously thank my medical team and therapist, Amber, for keeping me alive to finish as well as my support group.

I would like to thank Grazia Manzotti, Anastasia Kotzamani, my fellow postgraduate peers and friends, and the students I taught and supervised.
- Louise Grimmett and UCL Student Health and Wellbeing
- UCL Great Ormond Street Institute for Child Health
- UCL Collaborative Centre for Inclusion Health
- Center for Healthful Behavior Change, Institute for Excellence in Health Equity, NYU Langone Health
- Professor Muki Haklay and Extreme Citizen Science (ExCiteS) research group at UCL
- UCL Public Engagement and UCL Co-Production Collective

At the London Borough of Newham local authority, I would like to thank Ashlee Teakle, Carol Irish, Laura Austin-Croft, Candida Thompson, Frank MacCool, and Pat Halligan.
I would like to thank the families and professionals who generously gave their time to participate in this study and the Early Years, Children’s Health, Social Services, and Public Health teams at the London Borough of Newham, non-profit and voluntary sectors such as Shelter England and Magpie, and Prof. Lakhanpaul for their support and sharing of resources.

Lastly, I would like to thank Professor Claire Cameron and the ActEarly Team for their support and generosity.

This thesis is dedicated to all children who are experiencing homelessness/have experienced homelessness.
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- ACE- Adverse Childhood Experience
- A&E- Accident & Emergency Services
- B&B- Bed & Breakfast Hostel/Hotel
- CBCL- Child Behaviour Checklist
- CBPR- community-based participatory research
- CCA- complete case analysis
- CDC- Centers for Disease Control and Prevention
- CM- Collaborative Meetings
- COVID- The COVID-19 Pandemic
- CPAG- Child Poverty Action Group
- DLUHC- Department for Levelling Up, Housing and Communities
- DMR- Diana Margot Rosenthal, Doctoral Researcher
- ECSA- European Citizen Science Association
- EDS- Ehlers-Danlos Syndrome
- FEANTSA- The European Federation of National Organizations working with the Homeless
• GDPR- General Data Protection Regulation

• GP- General Practitioner

• GPS- Global Positioning System (GPS)

• HA 1996- Housing Act 1996

• HBV- Hepatitis B Virus

• HCP- Healthy Child Programme

• HCV- Hepatitis C Virus

• HCGLA- Homelessness Code of Guidance for Local Authorities 2018 (revised in 2022)

• Health Map- The health map for the local human habitat

• HHSRS- The Housing Health and Safety Rating System

• HiAP- Health in all policies

• HIC- high-income country

• HMO 2006- The Licensing and Management of Houses in Multiple Occupation and Other Houses (Miscellaneous Provisions) (England) Regulations 2006

• HO 2003- Homeless (Suitability of Accommodation) (England) Order 2003

• HP- Health Professional
• HRA 2017- Homeless Reduction Act 2017

• HV- Health Visitor

• LA- Local Authority

• LBN OR Newham- London Borough of Newham

• LMIC- low-to-middle-income country

• LTEH- Long-term empty houses

• Magpie- The Magpie Project

• MHU- Mobile health unit

• MI- Multiple imputation

• MM- Mixed Methods

• NHS- National Health Service

• Non-TA- Not living in temporary accommodation

• NP- Non-profit Organisation

• NRPF- No recourse to public funds

• OECD- Organization for Economic Cooperation and Development

• OLR- Ordinal logistic regression
• ONS- Office of National Statistics

• PAR- Participatory action research

• PHSO- Public health service outreach

• PII- Personally identifiable information

• PROMS-patient-reported outcome measures

• RO- Research Objective

• RCPCH- Royal College of Paediatrics and Child Health

• RCT- Randomized controlled trials

• RPS- Research Priority Setting

• SDGs- Sustainable Development Goals

• SEP- Socio-economic position

• SEM- Social Ecological Model

• SEND- Children with special educational needs and disabilities

• TA- Temporary Accommodation

• U5TA- abbreviation for the following: Under 5s experiencing homelessness in temporary accommodation; Under 5s in temporary accommodation experiencing
homelessness; Under 5s in temporary accommodation; Under 5s living in temporary accommodation due to experiencing homelessness; Under 5s in temporary accommodation due to experiencing homelessness

- UDHR- Universal Declaration of Human Rights
- UK- United Kingdom
- UN- United Nations
- UN OHCHR- United Nations Office of the High Commissioner of Human Rights
- Under 5s - Children under the age of five
- US- United States of America
- USDA- United States Department of Agriculture
- WHO- World Health Organization
Chapter 1

Introduction

1.1 Overview of the Background

This doctoral study aimed to explore the barriers and facilitators to optimising health outcomes and accessing health care services among children under five years old living in temporary accommodation (U5TA) in England. This first chapter sets the scene for the thesis with an overview of the background literature. The background covers the following areas: the importance of the early years of life, national and global health policies designed to optimise the early years, definitions of homelessness, including temporary accommodation, the prevalence of child homelessness, and the policies that impact child health and homelessness.

1.2 The first 1,000 days and five years of life

The first 1,000 days of life—from conception to a child’s second birthday—is a critical period for growth, optimal health, and brain development, influenced by various factors. According to UNICEF, “The first 1,000 days can shape a child’s future. We have one chance to get it right.” This argument can be equally applied to the first five years of life, during which approximately 90% of brain development occurs.

Many children fail to reach their development potential due to multilevel barriers, including those resulting from poverty and/or homelessness. Thus, cross-sector interventions and partnerships are required to address health, housing, and education needs together. Investment in the early years of childhood is more likely to improve long-term health outcomes compared to any other period in a child’s life. In England, systems such as Sure Start were developed to deliver a variety of services designed to foster children’s health and wellbeing, social and emotional development, and cognitive learning skills in the most disadvantaged areas.
However, such systems and programmes have progressively been reduced in recent years in the wake of national budget cuts and the rise of conservative government.\textsuperscript{31} This puts at-risk, marginalised groups, including children experiencing homelessness, further down on both child care and national agenda setting, thereby reducing the integrated support for children in the early years. Furthermore, the "Marmot Review 10 Years On Report" demonstrates that the inequality and inequity gaps have further widened across England since 2010, losing a decade of opportunity to improve child health from the austerity regime, even before the COVID-19 pandemic outbreak.\textsuperscript{33}

1.3 Adverse Childhood Experiences (ACEs)

Many adverse experiences in the early years of life can significantly affect the life course of the child and their future adult lives. These adverse childhood experiences (ACEs) are defined as stressful life experiences or events that a child can be directly or indirectly exposed to before the age of eighteen years.\textsuperscript{34} The terminology and measure of ACEs originated from a Centers for Disease Control and Prevention (CDC) and Kaiser Permanente study during 1995-1997, documenting significant associations between ACEs and negative outcomes in later-life health and wellbeing.\textsuperscript{35–37} Traditional ACEs were first categorised into ten family-level categories across three themes, abuse, household challenges, and neglect, which occur within the home or family. Community-level ACEs were later added to describe structural and social adversities that could be experienced outside the home.\textsuperscript{35,36}

Homelessness is agreed by many to be an ACE because it is a childhood adversity.\textsuperscript{36,38,39} Although homelessness is an adverse experience of social exclusion and inequality that can occur during childhood, it has not been formally recognised as one of the ACEs on a national level in England, however, on a global level, a few categories of homelessness are treated as ACEs.\textsuperscript{40} This is most likely due to differential definitions used to describe various forms of homelessness, which vary from country to country and study to study.\textsuperscript{41} (see Sections 1.5 and 7.3.Domain I).
ACEs tend to cluster. Evidence shows that experiencing homelessness, a childhood adversity, is linked to the socioeconomic circumstance of the child, especially for young children dependent on parents and/or carers and their ability to provide for them. Children living below the United States (US) Federal Poverty Line, including those experiencing homelessness, are five times more likely to experience higher ACEs (n= ≥ 4) compared to those living in financially stable households. Youth and adult homelessness is also more prevalent in individuals with a history of ACEs, especially in social and economic deprivation. Adults who experience homelessness as a child also report greater exposure to other ACEs. For example, one US study reported that 68.1% of adults who experienced homelessness in childhood reported exposure to four or more ACEs, compared to 16.3% of adults who had not experienced homelessness in childhood. Homelessness is both a biological and social problem because children develop essential cognitive and emotion regulation skills in the early years, which they need to adapt and cope with challenging situations as an adult successfully. While exposure to more ACEs can only increase the likelihood of future homelessness, adversities, social exclusion and health complications.

1.4 National and global public health programmes and guidelines
Since child homelessness can be a risk factor for multiple health issues and developmental challenges, national and international guidance aims to optimise the early years and mitigate ACEs. Three examples of this guidance applicable to children under the age of five years (under 5s) are discussed here.

1.4.1 Healthy Child Programme (HCP) - National Level
In England, the Healthy Child Programme (HCP) is an early intervention and prevention public health programme for children and families. During the early years, the HCP’s universal service helps determine which children are at risk of poor outcomes and which families need additional support. The HCP recognises the
need for “generic indicators” in health reviews to identify these at-risk children using family and environmental factors. As a result, it is considered the quintessential gold standard of health care services for children and their families.\textsuperscript{30,48} The core requirements of the HCP are:

- Early identification of need and risk;
- Health and development reviews with screening assessments conducted once before birth (12\textsuperscript{th} week of pregnancy) and five times before 2-2.5 years of age (at ages: newborn, 14 days, 6-8 weeks, 1 year and 2-2.5 years)
- Immunisations;
- Promotion of social and emotional development;
- Support for parenting;
- Keeping the family in mind;
- Effective promotion of health and behavioural change;
- Prevention of obesity;
- Promotion of breastfeeding;
- Additional preventive programmes for children and families.\textsuperscript{25,30,49}

The HCP now uses the 4-5-6 approach for health-visiting children ages 0-5 years to safeguard, improve access, and improve health and wellbeing outcomes (Figure 1.1).\textsuperscript{50} The six high-impact areas of the 4-5-6 approach for children ages 0-5 years are:

- Parenthood and early weeks;
- Maternal mental health;
- Breastfeeding;
- Healthy weight;
- Minor illness and accidents;
- Healthy 2-year-olds and getting ready for school.
The approach is also used for school nursing and has a further six impact areas for school-aged children from 5 to 19 years. However, the HCP doesn’t take into consideration some of the barriers that families experiencing homelessness may face when trying to access these services and optimise their children’s health outcomes according to these guidelines. People experiencing homeless generally have difficulties accessing health services and have worse health outcomes compared to the general population, but less is known about the early years.

**Figure 1.1 Healthy Child Programme: 4-5-6 approach**

1.4.2 United Nations and WHO- Global Level

In 2015, the United Nations (UN) launched the Global Strategy for Women’s, Children’s and Adolescents’ Health (2016-2030): Survive, Thrive, Transform. The UN envisioned a world where every woman, child and adolescent in all settings know their rights to physical and mental health and wellbeing, can access social and economic opportunities, and can “… participate fully in shaping prosperous and sustainable societies (p.6).” The WHO similarly released the Nurturing Care Framework consisting of five essential components: 1) good health; 2) adequate
nutrition; 3) security and safety; 4) opportunities for early learning; and 5) responsive caregiving. This framework provided a strategic road map for multiple sectors (e.g. health, education, finance, social care, sanitation, etc.) and levels of government to support the holistic development of children during the first 1,000 days of life until age 3. It promoted the utilisation of local assets in a local context but ownership at the community level, which fed into this PhD’s study design discussed in Chapter 2.

Despite these renowned strategies and frameworks, more than five million global deaths across all age groups each year are attributed to the failure to meet current physical activity recommendations due to their surrounding environments. In response to this epidemic, WHO international guidelines and the Let’s Be Active campaign recommended the following for children under the age of 5 (under-5s) regarding physical activity, sedentary behaviour and sleep habits: interactive play, good quality sleep, and less sedentary screen time per day. More specifically, under-5s should spend less time sitting and watching digital screens, and less time restrained in prams and seats. See Table 1.1 for specific daily guidelines corresponding to age group. WHO said that if all three areas are “established early in life, this helps shape habits through childhood, adolescence and into adulthood.” These guidelines are particularly important to consider for children in TA when interpreting the results of this doctoral study including U5TA having the space to play and explore.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Physical Activity /Day</th>
<th>Sedentary Screen Time /Day</th>
<th>Good Quality Sleep /Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 yr old</td>
<td>30 mins minimum</td>
<td>0 mins</td>
<td>14-17 hrs (0-3 months of age)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12-16 hrs (4-11 months of age)</td>
</tr>
<tr>
<td>1-2 yrs</td>
<td>180 mins minimum</td>
<td>0 (1 yr of age)</td>
<td>11-14 hrs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60’ maximum (2 yrs of age)</td>
<td></td>
</tr>
<tr>
<td>3-4 yrs</td>
<td>180 mins minimum of which at least 60 mins moderate to vigorous</td>
<td>60’ maximum</td>
<td>10-13 hrs</td>
</tr>
</tbody>
</table>
1.5 Definitions of Homelessness

At present, there is no universally accepted definition of homelessness.\textsuperscript{58} The definition of homelessness is not simply the lack of having a home, but the lack of having a secure, permanent home. Thus, it includes those living in temporary accommodation (TA), meaning residents/families can be forced to move out with very little notice.\textsuperscript{59} Likewise, there is no UK-wide definition for “hidden homelessness”, and according to the Office for National Statistics (ONS), there is limited data, and it’s difficult to compare statistics across the UK because of differential definitions, data capture and policies across the four nations.\textsuperscript{60}

In England, housing status for people experiencing homelessness can range from: 1) TA through the Local Authority and Housing Association; 2) staying with friends or family or sofa surfing; 2) staying in a hostel (including refuges), night shelter or bed and breakfast hotel (B&B); 3) squatting; 4) living in poor conditions that affect their health as well as living apart from their families because they don’t have a place to live together; and 5) homeless on the street at night.\textsuperscript{61,62} The lack of a universal definition of homelessness also means a lack of standardisation about definitions and metrics across reports and research (\textit{Chapters 3 and 7}).\textsuperscript{25} Housing is a human right, and this standardisation problem is evident in the inconsistent definitions used by key global organisations: the United Nations (UN) and the European Federation of National Organizations working with the Homeless (FEANTSA).

1.5.1 UN Declaration of Human Rights (1948), Article 25 and adaptation by Amnesty International

The earliest and most notable definition of homelessness is the Universal Declaration of Human Rights (UDHR), which the United Nations General Assembly drafted in Paris (\textit{General Assembly resolution 217 A}) and has since been considered to be a milestone in human rights history as it set a universal standard for the protection of fundamental human rights.\textsuperscript{63} It has been translated into over 500 languages.\textsuperscript{63} Article 25 described below outlines a standard for individuals similar to what is stated by Maslow’s hierarchy of needs\textsuperscript{64} (\textit{Chapter 2}). However, these
standing definitions are gender biased and, thus, out of date since they have not been revised since their inception in 1948.

Article 25:

- “(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age, or other lack of livelihood in circumstances beyond his control.
- (2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.”

Amnesty UK created their own summary of the UN declaration to be more inclusive.

- “We all have the right to enough food, clothing, housing and healthcare for ourselves and our families. We should have access to support if we are out of work, ill, elderly, disabled, widowed, or can’t earn a living for reasons outside of our control. An expectant mother and her baby should both receive extra care and support. All children should have the same rights when they are born.”

1.5.2 The European Federation of National Organisations (FEANTSA)
The European Federation of National Organisations (FEANTSA) created a “quality-oriented” definition of homelessness through a four-fold classification to define homelessness conceptually and evaluate its extent through operational categories and living situations. These classifications, known as ETHOS, the European Typology of Homelessness and Housing Exclusion, have been since cited in the Global Report 1996. These classifications, known as ETHOS, the European Typology of Homelessness and Housing Exclusion, have been since cited in the Global Report 1996.

1. rooflessness (i.e., people sleeping rough or in emergency accommodation);
2. houselessness (i.e., people living in institutions, shelters or short-term `guest’ accommodation);
3. **insecure accommodation** (i.e., people living in insecure accommodation, under the threat of eviction and/or under the threat of violence)

4. **inferior or substandard housing** (i.e., people living in unfit housing, extreme overcrowding and/or unconventional structures).

I consider these classifications umbrella terms, which are inclusive although ambiguous and present barriers to data collection and quality especially for its international application. Therefore, these classifications would benefit from subclassifications or subgroups to accommodate countries where the definitions may vary and be based on the socio-cultural or socio-political context. I discuss these issues further in *Chapters 3 and 7*.

### 1.5.3 PhD Thesis Definition of Homelessness

Based on the heterogeneity and lack of standardisation across organisations, this PhD utilised the FEANTSA definition of homelessness when referring to homelessness more broadly. For the purposes of this PhD, I took a pragmatic approach and specifically included “temporary accommodation” in the same category as classes 3. “**insecure accommodation**”, and 4. “**inferior or substandard housing**”. As described below, I have tailored this definition to the specific setting and aligned it with current policies because children are most likely to end up in TA rather than sleeping rough.

According to the ONS, “**Temporary accommodation may be provided while an assessment decision is being made or while homeless households are waiting for longer-term accommodation**” in England. People living in TA are generally referred to as ‘statutory homeless’, which describes households deemed to be homeless, eligible and in ‘priority need’. ‘Priority need’ often refers to pregnant women and adults with dependent children and/or households with a vulnerable member (e.g., someone with a disability or who has recently left prison) or a person who is homeless or threatened by homelessness because of an emergency e.g., a natural disaster. Oftentimes, children are placed in a different geographical area than
where they originally resided due to the shortage of affordable housing supply near their previous home.\textsuperscript{72}

More specifically, according to the charity Shelter, TA is given when an individual makes a homelessness application and the council either 1) decides they qualify for longer-term housing but hasn't made a final housing offer or 2) places them in emergency housing but hasn't moved them yet after deciding they qualify for longer-term housing.\textsuperscript{73} London has historically accounted for three-quarters of individuals living in TA in the UK.\textsuperscript{74} TA types are notably heterogeneous: some are intended for short-term (days/weeks), while others are intended for longer-term stays. These include:

- Bed and breakfast hotels and shared annexes
- Hostels (including women's refuges)
- Local authority/housing association stock
- Leased from the private sector by an LA or HA
- Local authority/housing association stock
- Others in the private sector including private landlords.\textsuperscript{74}

However, TA can be provided through the following government divisions: Housing Office, Home Office and Social Care\textsuperscript{75,76} using different definitions or eligibility criteria and policies. This thesis considered all types which previous studies have not (\textbf{Chapter 3}). This aspect is important to consider because not all families qualify for TA depending on the policies.

From an individual-level perspective, words matter—using the term “\textit{homeless}” people implies that the individual is defined by their situation and there is no hope for change. However, using the terminology people “experiencing homelessness” implies that the individual is not defined by their housing status, and this is only a fragment of time in their life, which has the potential to change.\textsuperscript{77} Therefore, in this thesis, I use a \textit{person-first} approach\textsuperscript{78} as preferred by people experiencing homelessness unless I am referencing a person, research study or policy who has used that terminology [in that case, I indicate this with italics or quotation marks e.g. \textit{“homeless families”}]. Furthermore, I use the terms “community affected”, “community
impacted”, “interested parties”, “partners”, and “decision makers” instead of “stakeholders” because of its colonial origins; if the term “stakeholder” appears, I am referencing another source.

1.6 Prevalence of Child Homelessness

1.6.1 Global and High-Income Countries

The total number of children who are homeless worldwide is currently unknown. Outdated data from 1989 estimated that there were 100 million “street children”, a possible proxy for the number of children experiencing homelessness. Today, 356 million children live in extreme poverty; 1 billion are multi-dimensional poor with poor access to housing education, health, nutrition, and sanitation; and 1.6 billion people live in inadequate housing worldwide.

In less than a decade, homelessness has notably increased across Organisation for Economic Co-operation and Development (OECD) countries or high-income countries (HICs); therefore, the prevalence of ACEs has grown in current and future generations. In Ireland, family homelessness almost quadrupled between 2014 and 2018, from 407 to more than 1,600 households, while between 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. 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. In Los Angeles (US), 78% of 169 school-age children living in emergency family shelters suffered depression, a behavioural problem, or severe academic delay. However, many of these studies were not specific to under 5s OR under 5s in TA as per the definitions provided, demonstrating an existing evidence gap in the literature. Furthermore, as stated above, many studies do not clearly define “homelessness” in their samples, which also adds to the evidence gap because there is no way to know what subgroup of
this marginalised population they represent. These data are important because each person experiencing homelessness has different needs, circumstances, access, etc., and such evidence helps tailor interventions, programmes, strategies and more to that subgroup.

1.6.2 England
In England, child homelessness and poverty have increased substantially alongside growing health inequalities and inequities over the last decade, although these issues have dated back to the previous century. In 2018, the total number of children experiencing homelessness and living in TA was 123,130 compared to the total aged 0-17 general population in England: 11,866,957. Thus, an estimated 1 per 96 children in England were homeless and living in TA—a 62% increase over the last five years. These rates were magnified in London: 87,310 children in TA compared to the total aged 0-17 population in England: 2,001,359. Moreover, this was equivalent to 1 child per 23 children in London—a 49% increase over the last five years.

In 2019, 120,000 children were reportedly living in TA in England, an 80% increase between 2010-2018, and 90,000 children staying with friends or family in often cramped conditions referred to as “sofa surfing.” The data, the Commissioner concluded, ‘suggests that there could be more than 210,000 children homeless in England’ and approximately 585,000 who either are homeless or at risk of becoming homeless. In 2017, approximately 2 in 5 children in TA (an estimated 51,000 children) had been living there for at least 6 months, and approximately 1 in 20 (an estimated 6,000 children) had been there for at least a year. In December 2019, Shelter released the Generation Homeless report, which highlighted that a child loses their home every eight minutes in Great Britain—the equivalent of 183 children per day, or for a visual, “enough to fill 2.5 double decker buses.” In comparison with the prior report in 2018, the total number of children that were homeless and living in TA rose to 126,020 in England, of which 88,080 children were in London.
During the pandemic in 2020, the number of families in TA across England significantly increased: approximately 253,000 people in England were experiencing homelessness and living in TA—the highest figure in 14 years.\(^3\) On 31 December 2021, 96,410 households were in TA, including a total of 121,680 dependent children.\(^89\) The number of TA households was up 0.9% from the previous quarter: single households increased by 1.5%, and households with children increased by 0.5%.\(^75\) In London, 16.6 households were living in TA per 1,000 households, compared with 1.9 households per 1,000 in the rest of England.\(^89\) There is a myriad of direct and indirect health, social, and educational consequences for children and families experiencing homelessness; however, there is less evidence for U5TA in England. U5TA have an invisible plight that might not seem obvious because they are not on the streets as homeless (e.g., rough sleepers).\(^13\) Without a national register for under 5s and a coordinated care system, U5TA are highly vulnerable and even less visible or “hidden” to vital services (Chapter 6). While there are numerous benefits of a register, they must be weighed against the potential cons, including: the needs to obtain informed consent, data security and ensuring the register remains up to date across sectors. However, I believe the pros outweigh cons because it ultimately solves an unmet need promoting coordinated care to vulnerable under 5s.

### 1.7 Pathways to Homelessness

Multiple pathways lead to homelessness, including but not limited to structural, institutional, relationship and personal variables or a combination of all the above.\(^58,90\) Some pathways are on a health, relationship and/or personal level, such as mental or physical health problems; ACEs; substance misuse and/or domestic violence or abuse; splitting up with a partner; family and friends asking someone to leave; harassment by neighbours; unemployment or job loss.\(^91,92\) Moreover, on a structural, political or institutional level, pathways can include, but not be limited to, being evicted or Section 21 “No fault” evictions;\(^93,94\) lack of affordable housing; rising rents and gentrification; lack of social housing; lack of welfare reform; low wages or housing benefit cap; no home to go to after leaving prison, care or the

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* In England, a Section 21 “No Fault” Eviction is a notice that a landlord must give to their tenant to begin the process to take possession of a property let on an assured shorthold tenancy, but without needing to provide a reason for wishing to take back possession of the property.\(^93,94\)
army; and a natural disaster such as fire or flooding. Migrants face additional challenges, including insecure immigration status, no right to work, and no recourse to public funds (NRPF).95–97

Poverty is perhaps the common thread throughout the pathways, but the extent of its impact varies from case to case due to many other overlapping pathways and unique sets of circumstances. Still, strong evidence supports poverty and lack of affordable housing as the primary structural-related causes of family homelessness.96 Fitzpatrick, Bramley, & Johnsen, 2013 categorised these pathways even further through multiple exclusion homelessness. Multiple exclusion homelessness is experienced by people who: 1) have been homeless (e.g., temporary or unsuitable accommodation as well as rough sleeping) AND 2) experienced one or more domains of deep social exclusion (e.g., “institutional care” OR “substance misuse” OR “participation in street culture activities”).91

1.8 Relevant Policies in England and at Global Level

1.8.1 Children Act 1989, Section 17 (latest Children Act 2004, Section 11)
The Children Act aims to ensure that all children are safeguarded, and their welfare is protected; it also advocates that children are best cared for in their own families.98,99 The Act was created to provide a safety net for families when faced with homelessness. The first clause states that every local authority is “a) to safeguard and promote the welfare of children within their area who are in need; and (b) so far as is consistent with that duty, to promote the upbringing of such children by their families, by providing a range and level of services appropriate to those children’s need.”98

However, according to the Children’s Commissioner Report (2019), the Act does not function this way in reality. Councils are not required to report on families housed by children’s services, and there is no central data or system to monitor the types of accommodation families are housed in and whether the number of children housed is increasing.76 Standard regulations settings do not apply to families accommodated
by children’s services (e.g. NRPF status), so councils can decide what counts as suitable housing. For example, there is no legal limit on the length of time a family can be housed in a B&B if there is no alternative housing available.\textsuperscript{71,100} In addition, the Act doesn’t provide guidance or standards in relation to the suitability of the accommodation offered.\textsuperscript{101}

There is also a lack of coordination between children’s services and housing departments. Many children’s services lack housing expertise and contacts with local landlords, thereby increasing the likelihood of placing children in suboptimal conditions like B&Bs, which is oftentimes an economic drain on councils.\textsuperscript{76} Project 17, a London-based charity, reported that councils are ignoring their duty to help and only comply when forced by legal action. For example, 90\% of their clients with children were only offered accommodation after legal action was taken, but in the meantime, many families were forced to sleep on the streets, in Accident & Emergency (A&E) waiting rooms, night buses and police stations.\textsuperscript{76} Furthermore, the Department for Education is responsible for Children in Need, i.e. those legally defined as “\textit{needing help and protection as a result of risks to their development or health},”\textsuperscript{102} but there is not a clear focus at a national level on children whose needs are housing-related, nor central collection of data about these children with any mention of housing or homelessness in the Department for Education’s reviews.\textsuperscript{76,103}

1.8.2 Housing Act (1996)
UK Parliament passed the Housing Act in order to make provisions regarding: 1) housing conditions, 2) home information packs in connection with the sale of residential properties, 3) secure tenants and the right to buy, 4) mobile homes and the accommodation needs of gypsies and travellers, and 5) housing and for connected purposes.\textsuperscript{104} It was intended to “…\textit{regulate houses in multiple occupation and certain other residential accommodation.”} Part VII of the Housing Act serves as the primary homelessness legislation to prevent homelessness and provide aid to people threatened with homelessness or experiencing homelessness.\textsuperscript{104} Many families experiencing homelessness are placed in temporary or insecure housing by the local housing authority\textsuperscript{71,105} while they wait for permanent accommodation, which is
provided under the Housing Act. However, not all families experiencing homelessness have a right to accommodation from the Housing Department or are eligible for accommodation under the Act, such as:

- Families with **No Recourse to Public Funds (NRPF)**, i.e., those subject to immigration control and can only receive advice and information. There are some Families with NRPF who are housed temporarily under Social Care or Home Office policies, but not under the Housing Act.\(^{95,106}\)
- Families deemed “intentionally homeless” if they fail to pay their rent despite being judged affordable, left their homes when they could have stayed, or were evicted due to behavioural issues.\(^{76}\)

As the Children’s Commission Report highlights, the line between intentional and unintentional homelessness can be blurred.\(^{76}\) For example, a case was brought to the Supreme Court in January 2019 after a single mother was declared intentionally homeless because she could not afford to use her non-housing benefits to cover the £35 weekly shortfall between her Housing Benefit and her rent.\(^{107}\) The court ruled in her favour and urged the council to reconsider its decision.\(^{107}\) When families are declared intentionally homeless, they are not entitled to long-term housing under the Act. Furthermore, when a family is found ineligible for accommodation under the Act, the housing department is required to provide emergency accommodation for a reasonable period (i.e., normally a few weeks) to give the family time to find somewhere to go and to provide advice and assistance with this process.\(^{76}\)

### 1.8.3 Homelessness Act 2002 and Homeless Reduction Act 2017

The homelessness legislation under the Housing Act was amended through the Homelessness Act 2002, and the Homelessness (Priority Need for Accommodation) (England) Order 2002.\(^{71}\) “Priority need” was previously discussed in **Section 1.5.3**. These amendments essentially increased the aid available and extended the priority need categories to include “…homeless 16 and 17 year olds; care leavers aged 18, 19 and 20; people who are vulnerable as a result of time spent in care, the armed forces, prison or custody, and people who are vulnerable because they have fled their home because of violence.”\(^{71}\)
The Homeless Reduction Act was passed in 2017 to ensure that local councils provide more help to people who are homeless or might lose their homes. For people who are homeless, or at risk of becoming homeless, the councils must help them stay in their homes and/or find accommodation. The following duties have been outlined in the Act:

“a stronger prevention duty to ensure councils help a household threatened within 56 days regardless of their priority need status…; a new relief duty requiring councils to take reasonable steps for 56 days to relieve homelessness, regardless of whether the household is in priority need; a duty to provide advice and information about homelessness within the area; and a duty to refer, which requires a range of public sector entities (e.g. children’s services and youth offending teams) to notify local authorities of people they think are homeless or at risk of homelessness.”

However, there is no mention of the ramification if councils fail to do so and the specific duties of housing associations.

In England and Wales, the council must help if an individual or family is legally homeless or threatened with homelessness, i.e., likely to be homeless within the next eight weeks or received a Section 21 notice from their landlord. However, the amount of help given by the council depends on individual circumstances. For example, for individuals or families who do not meet immigration and residence conditions, the council only has to give advice and information. Emergency housing is a short-term option that must be provided by councils for “most homeless families and some people without children who become homeless” while the council investigates each housing situation and decides the ways they must help in the longer term. As previously mentioned, not all individuals or families experiencing homelessness are eligible for emergency housing, and they must meet the following three criteria: 1) nowhere safe to stay; 2) have children, pregnant, or have another priority need; and 3) meet the immigration and residence conditions. In theory, it may take the council up to three months to decide whether a family is eligible for longer-term housing while they stay in emergency housing; however, in practice, families can end up staying for periods longer than three months. There is no formal enforceable limit on how long one can stay in TA. B&B policies legally deem:

“B&B accommodation is not to be regarded as suitable for applicants with family commitments (17.22)”, and “17.33. Housing authorities should, therefore, use B&B
accommodation to discharge a duty to secure accommodation for applicants with family commitments only as a last resort and then only for a maximum of 6 weeks."\textsuperscript{100}

Although these codes are in the current policies,\textsuperscript{100} this hasn’t always been the case for families, as demonstrated throughout the PhD. However, it is important to note that between 26 March 2020 and 30 September 2021, the Coronavirus Act 2020 provided additional protection to social and private tenants by delaying when landlords could evict tenants and had to increase required notice periods.\textsuperscript{110}

1.8.4 UN OHCHR: Key elements of the right to adequate housing

On 18 June 2020, the UN Economic and Social Council adopted a resolution titled: “Affordable housing and social protection systems for all to address homelessness”. This was the first UN resolution on homelessness. On the global level, according to the UN Office of the High Commissioner of Human Rights (UN OHCHR), “housing is a right, not a commodity”, and “adequate housing must provide more than four walls and a roof.”\textsuperscript{111} Furthermore, as a human right, as stated in section 1.5.1, there are seven key elements to adequate housing: security of tenure, availability of services, affordability, habitability, accessibility, location, and cultural adequacy.\textsuperscript{111} See Table 1.2 for more details on each of these elements and what entitlements and freedoms are included under the right to adequate housing.

| Table 1.2 Key elements of the right to adequate housing |
|---------------------------------|---------------------------------------------------------------------------------------------------------------|
| Security of tenure | Housing is not adequate if its occupants do not have a degree of tenure security which guarantees legal protection against forced evictions, harassment and other threats. |
| Availability of services | Materials, facilities and infrastructure: Housing is not adequate if its occupants do not have safe drinking water, adequate sanitation, energy for cooking, heating, lighting, food storage or refuse disposal. |
| Affordability | Housing is not adequate if its cost threatens or compromises the occupants’ enjoyment of other human rights. |
| Habitability | Housing is not adequate if it does not guarantee physical safety or provide adequate space, as well as protection against the cold, damp, heat, rain, wind, other threats to health and structural hazards. |
| Accessibility | Housing is not adequate if the specific needs of disadvantaged and marginalized groups are not taken into account. |
| Location | Housing is not adequate if it is cut off from employment opportunities, health-care services, schools, childcare centres and other social facilities, or if located in polluted or dangerous areas. |
| Cultural adequacy | Housing is not adequate if it does not respect and take into account the expression of cultural identity. |
The right to adequate housing contains entitlements.

- Security of tenure.
- Housing, land and property restitution.
- Equal and non-discriminatory access to adequate housing.
- Participation in housing-related decision-making at the national and community levels.

The right to adequate housing contains freedoms

- Protection against forced evictions and the arbitrary destruction and demolition of one’s home.
- The right to be free from arbitrary interference with one’s home, privacy and family.
- The right to choose one’s residence, to determine where to live and to freedom of movement.

Source: UN OHCHR

1.9 Chapter Summary and Research Rationale

Based on the background information presented and what is known, the rationale for this thesis is as follows:

- The first five years of life is a critical period for growth and development, but many children struggle to reach their full potential due to poverty and/or homelessness, including U5TA.
- Prior to this thesis, U5TA (as defined by Chapter 1), were rarely studied as an exclusive group, which isolated the impacts of TA on the early development years from the literature. There is an existing evidence gap for this specific population especially by not considering the various types of TA they can experience, provided by the Housing Office, Home Office and Social Care.
- ACEs negatively impact the chances for a child to live a healthy and productive life. Homelessness, including living in TA, is a childhood adversity, and ACEs have short- and long-term health impacts across the life course.
- There has been an increasing prevalence of children experiencing homelessness and living in TA in England, especially London Borough of Newham, which served as the setting for this thesis.
- However, the true prevalence of children in TA is unknown, which may be in part because there is no universal definition of homelessness and TA
worldwide. Therefore, many vulnerable groups are not accounted for in government reports in a timely and accurate way.

- The HCP and national and global public health guidelines are not tailored to the environments, finances, and transientness of U5TA, which may or may not inhibit their ability to reach developmental milestones.
- Many vital policies influence children in TA, but some may not be protecting children as intended due to the lack of a central data monitoring system, lack of coordination between public offices, lack of standard regulations settings for accommodation provided by children’s services and the blurred line between a family being determined intentional or unintentional homelessness by the local authority.
- The lack of a central data monitoring or coordinated care system and a national register for under 5s means that there may be under 5s in TA that are invisible and slipping through the net of health and social care services. Thus, there is no way to estimate if these under 5s are accessing health services or reaching developmental milestones on a national level.
- According to London Borough of Newham, many families with U5TA have yet to engage with universal services.
- There is no evidence demonstrating how pre-existing barriers experienced by U5TA in England have changed in the context of the COVID-19 pandemic, and to my knowledge, no evidence focused specifically on this population except for this thesis. Therefore, this thesis addresses these gaps in the following chapters.
- This population—U5TA and their families—has often been left invisible in the eyes of the public, government and research community. This thesis helps ensures they are seen and heard and advances the science through their direct inclusion in the research design process (Chapter 4). In Chapter 2, I describe my thesis research objectives and methodological framework.
Chapter 2
Research Objectives and Methodological Framework

2.1 Overview
In this chapter, I provide an overview of the research objectives, the theoretical underpinning of the PhD, and the concept map development, which were integrated into the epistemological stance and overall methodology, including a five-phase investigative framework. I end this chapter by describing how the PhD had to be redesigned due to the unforeseen obstacles that arose from the COVID-19 pandemic. Further descriptions of the challenges faced are discussed in Chapter 7. Specific research objectives and hypotheses for each study phase and detailed methods are discussed in the relevant chapter.

2.2 Thesis Aims and Research Objectives

Thesis Aims
In this thesis, the aims were to better understand the barriers and facilitators to:
1) accessing health care services (e.g., health and development reviews with screening assessments, vaccination uptake, support for common childhood ailments such as fever, diarrhoea, respiratory symptoms, accidents) and
2) optimising health outcomes (e.g., nutrition, overall wellbeing, growth, reaching developmental milestones, cognitive outcomes) among under 5s experiencing homelessness while living in temporary accommodation (U5TA) and their families in England.

The timeline of this PhD (September 2018 - June 2023) was such that the year 2020 coincided with the start of the COVID-19 pandemic. Thus, the aim of this thesis was adapted and extended to include:
3) an evaluation of the additive impact experience of the COVID-19 pandemic had on health outcomes and access for families of U5TA.
Hypotheses
The research hypotheses I tested are:

- U5TA experience more significant health inequities and inequalities through various multi-level barriers, which are influenced by social, economic and political determinants relating to the built and natural environments and access to health care.

- If there are facilitators to mitigating these multifaceted barriers, these are limited due to structural factors, such as the lack of coordinated policy and strain on resources under added pressure from the supply and demand of the growing numbers of U5TA on either the local or national level.

- The COVID-19 pandemic has exacerbated these barriers outweighing the facilitators, which also require systemic change and multi-level, cross-sector strategies and policies tailored to the specific needs of U5TA and their families.

These hypotheses remained relevant because child homelessness kept increasing with greater numbers of children spending their early years and some even born while their families lived in TA. However, since I started my PhD, the issues of suboptimal TA living environments only seemed to have gotten worse as this demand has increased.\textsuperscript{9,75,89} Reported policy loopholes and lack of council action led to the preventable death of two-year-old Awaab Ishak from a respiratory condition caused by mould exposure.\textsuperscript{112} Furthermore, early childhood services have reported that this demographic of U5TA is “\textit{hard to reach}” and the pandemic probably did not make that easier.\textsuperscript{21,22} Therefore, research was needed to identify practical challenges and solutions to aid the practitioners trying to meet the needs of these families and help families have a platform to better advocate for themselves. If these were not relevant, these challenges would not continue, and new ones would not arise at such a great magnitude.
Research Objectives

Here, I state the five research objectives (ROs) for this thesis. RO1 and 2 were addressed pre-pandemic and correspond with the first aim. RO3 to 5 were revised, and respective study designs were adapted following the start of the COVID-19 pandemic. The original ROs can be found in APPENDIX S2.1.

1. To explore what is known about the range of barriers (e.g., political, social, cultural, economic, educational, environmental) to achieve optimal health and wellbeing in U5TA.

2. To explore the potential of citizen science approaches working with families of U5TA to identify environmental factors impacting health outcomes and health care service access.

3. To quantitatively explore the barriers and facilitators to health care access and wider social, political, and environmental determinants of health during the COVID-19 pandemic for U5TA and their families.

4. To qualitatively explore how key professionals and key decisionmakers perceive the experiences of U5TA in accessing health care and optimising health outcomes as well their own challenges providing services to the U5TA population before and during the COVID-19 pandemic.

5. To triangulate data sources from ROs1-4 and produce recommendations to present to health, social care and housing services and relevant sectors for policy change; and make recommendations for potential interventions tailored to the U5TA population, inform future multisector strategies, and promote cross-sector collaboration.

Definitions of Key Terminology Used in This PhD

The definitions for key terms utilised in this PhD can be found in the Glossary. When standardised definitions were available, the WHO Health Promotion
terminology and definitions\textsuperscript{27,28} were prioritised. Throughout this PhD, health care\textsuperscript{113} service access is defined by the 5A’s of access to care, which consists of affordability (charges related to services, e.g. prescriptions, the individual’s ability and willingness to pay), availability (the provider’s resources, e.g. personnel and technology to meet the individual needs), accessibility (geographic accessibility and how easily the individual can physically reach the provider), accommodation (how operations are handled to meet needs of the individual, e.g. interpreters), and acceptability (how comfortable the individual is with fixed characteristics of the provider and vice versa, e.g. age, gender, ethnicity).\textsuperscript{5,114,115} I refer to this terminology when describing the barriers and facilitators that were found in each thesis chapter. Furthermore, health and health outcomes are defined by health status, health promotion, intermediate health outcomes (i.e. determinants of health), population health, and various composite and tracer indicators,\textsuperscript{28,116,117} with TA as the main exposure.

2.3 Theoretical Underpinning
The following section describes the theoretical underpinning of the PhD. Four relevant frameworks were identified, namely the Social Ecological Model, the Health Map for the local human habitat, Maslow’s Hierarchy of Needs, and the Settings Framework (Figures 2.1a-d). This multi-theoretical approach was chosen because one framework or model alone could not capture the complex, multifaceted nature of homelessness and its relationship with child health. Using these frameworks together with the background (Chapter 1) and Scoping Review (Chapter 3), a concept map was developed (Figure 2.2), which fed into the study framework and the methodological tools identified to meet ROs 2 to 5 inclusive (Figures 2.3 and 2.4).

2.3.1 Social Ecological Model
The Social Ecological Model (SEM)(Figures 2.1a, b) is a theory-based framework derived from the Bronfenbrenner Model describing the complex, interactive effects of personal and environmental factors.\textsuperscript{118–120} These factors shape behaviour and help to identify behavioural and organisational intermediaries for health promotion and public health prevention. Although there is overlap, both models are distinct and
organised differently. The Bronfenbrenner focuses specifically on the child at the individual and familial levels as systems, while the SEM is broader and looks at relationships among four hierarchical levels (individual, relationship, community and societal) using a top-down approach from low-impact to high-impact.\textsuperscript{119,121,122} (Figure 2.1a)

\textbf{Figure 2.1a Source: The Centers for Disease Control and Prevention (CDC), The Social Ecological Model: A Framework for Prevention.}\textsuperscript{119,121}

These levels are nested, with the innermost level being the individual level, which describes an individual’s characteristics that influence health behaviour such as knowledge, attitudes, personal history, behaviours, gender, age, religion, race, ethnicity, socio-economic position, literacy, stigma, and more.\textsuperscript{122} The relationship level refers to social networks and support systems, including family, friends, peers, co-workers and religious networks. The community level describes relationships among or between organisations, institutions, and informational networks (e.g. schools, neighbourhoods) within defined boundaries (i.e. the physical environment such as public spaces and parks, community leaders, businesses and transportation).\textsuperscript{122} On the societal level, structural and systemic factors include health, economic, educational, and social policies, which can contribute to health inequalities and inequities.\textsuperscript{119} Each of these levels was incorporated into the thesis study design and concept map. The SEM helped inform RO1, and the topic guides the qualitative study of the thesis. Furthermore, the SEM was used to explore how each of these levels and the corresponding settings and environments (e.g. housing, clinics) prevented or facilitated the optimisation of health outcomes and access to health care services in this marginalised population.\textsuperscript{123}
According to UNICEF, the Bronfenbrenner ecological theory was supported by a comparatively small range of relevant research\textsuperscript{120} at the time of its introduction, but today, the SEM's nested structure of environmental influences has been applied and tested in a variety of disciplines and research fields using advanced econometric methods such as multilevel modelling (\textbf{Figure 2.1b}) on a global level including in the HIV/AIDS context for individuals who use drugs and are living in temporary or insecure accommodation.\textsuperscript{124} As Zlata Bruckauf and Sarah Cook (2017) rightfully point out, very few Sustainable Development Goals (SDGs) are child-focused.\textsuperscript{125} Although this thesis looks at child homelessness at a local and national level, it is a global issue (\textbf{Chapter 1}).\textsuperscript{83} Using a life course approach, SEM offers flexibility but also conceptual consistency to help navigate the complex, wide-ranging, but also disjointed, SDG targets through adaptation and “\textit{guidance on how these targets relate to children’s developmental needs, healthy growth and protection from harmful practices.}”\textsuperscript{125,126} This approach guided the second aim to consider short- and long-term impacts of experiencing and living in TA for under 5s and what future generations will look like.

\textbf{Figure 2.1b Source: UNICEF. Child-centred Approach to Sustainable Development Goals in High-income Countries: Conceptual Issues and Monitoring Approaches. Innocenti Working Paper 2017-06.}\textsuperscript{125}

\begin{center}
\includegraphics[width=0.8\textwidth]{HealthMap.png}
\end{center}

\textbf{2.3.2 Health Map for the Local Human Habitat}

The Health Map for the local human habitat (Health Map) (\textbf{Figure 2.1c})\textsuperscript{127} acknowledges 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.” Due to increasing concern for levels of physical inactivity, obesity, asthma and increasing environmental inequality, the Health Map was created by blending Whitehead and Dahlgren’s 1991 diagram with ecosystem theories and sustainable development principles. This version was consolidated and refined from previous works and feedback from the UK Public Health Association, the Commission for Architecture in the Built Environment, WHO Healthy Cities and more. The Health Map served as a visual model intended for cross-sector professionals to communicate and analyse the health-settlement relationship with the influence of and dependency on global ecosystems. For example, urban planners can see their essential role in determining health as they influence housing quality and the built environment. As conducted in this thesis, this can aid the analyses of secondary or indirect effects which significantly affect health.

The Health Map was also incorporated into the PhD by considering the determinants of health and well-being from the natural environment (i.e., neighbourhoods: access to green spaces; pollution, clean resources- water) and built environment (i.e., housing) on the community level. These environments were critical in considering context and variables impacting health services access and optimal health among U5TA and were applied to the study design and objectives in the citizen science work (Section 2.4.2). The Health Map is more granular than the SEM on the community level, including different physical and social factors within neighbourhoods, which could also be applied to larger regional systems. This enabled further clarity in designing the methodological framework and flexibility, ensuring that the thesis results at the local level in the London Borough of Newham (see Section 2.4.3) could be compared to the regional and national levels.
2.3.3 Maslow’s Hierarchy of Needs
Maslow’s hierarchy of needs is a motivational theory depicted as a five-tier, hierarchical pyramid of human needs. This theory posits that needs at the bottom of the pyramid on the physiological level (e.g., shelter, air, food, drink, clothing, warmth, sleep) must be satisfied before needs are met on the higher levels (Figure 2.1d). After the physiological needs, safety needs must be met, such as security, safe dwellings and environment, stability and freedom from fear. The third level, love and belongingness, is the interpersonal relationship seen in the SEM, such as friendships, family, trust, being part of a group and receiving love and affection. Esteem needs, esteem from oneself and the desire for respect from others, is the fourth level, and Maslow argued that this level is the most critical for child development. Lastly, at the top of the pyramid—self-actualisation needs are self-fulfilment and the realisation of personal potential. Since the originally proposed theory, Maslow revised his theory in the 1970s to include three more levels: cognitive (e.g., knowledge, understanding, curiosity and exploration), aesthetic (e.g. appreciation and search for balance, beauty, and more), and transcendence (e.g. experiences that transcend beyond the individual including religion and faith) needs. In this PhD study, the theory was used to identify which methods could determine whether or not the needs of U5TA are met on the physiological level.
and, if not, what factors may compromise it. In essence, I considered this theory because the second and third thesis aims link to housing on the foundational level, and how if that basic need is not met, a child can’t get back those prime developmental years prompting short- and long-term health implications. This was explored in-depth in a qualitative study.

Figure 2.1d Maslow’s Theory of Needs ©University of Reading

2.3.4 Settings Framework

The Settings Framework is an essential component of health promotion and participatory approaches to health. The World Health Organisation (WHO) defines settings as: “The place or social context in which people engage in daily activities in which environmental, organisational and personal factors interact to affect health and wellbeing.”

Settings can be used as sites of health promotion by reaching people who use them to gain access to services and the interaction of different settings, including the physical environment and the organisational structure relating to administration and management. This framework promotes a contextually relevant approach. Settings can include homes, hospitals, clinics, schools, charities, villages, churches, barbershops, etc.

In this thesis, the Settings Framework was originally applied when determining an appropriate access point for vulnerable U5TA and their families, and a charity based in Newham was selected since the population of interest accessed multiple services there regularly. However, besides identifying an ideal setting, this thesis took the framework a step further by enabling mothers of U5TA to collect data in their
neighbourhood and housing environments and discuss it with their cohort of mothers in a safe space provided by the local charity (Chapter 4). Furthermore, each subsequent study phase considered the interaction U5TA and their families might have in different settings, whether it was the home, GP practice, children’s centre, borough(s) and more.

### 2.3.5 Concept Map Development

Concept mapping is a useful tool that can define the theoretical underpinning of a research study and visually display how it is applied to the literature review and evidence synthesis (Chapter 3). Due to overlaps between models and structural levels, I simplified the structural levels into three levels: Individual & Family, Community, and Systems. I organised these levels into a concept map (Figure 2.2) to guide this thesis to determine which variables were potential barriers and facilitators for U5TA or which variables could potentially influence these levels. The concept map was developed from background literature (e.g. WHO Nurturing Care Framework, Chapter 1), evidence-based research, and my prior experience in health policy and social epidemiology.

![Figure 2.2 Concept Map demonstrating the different types of barriers and environments that contribute to health inequalities and inequities for U5TA.](image)
In this concept map, under 5s are at the epicentre. This signifies that under 5s are influenced by factors and environments around them, which directly or indirectly affect their health in the short or long term. The concept map can be applied to parents and caregivers since U5TA are not navigating relationships and services, but rather their parents/caregivers must make decisions for them.

Individual & Family-level variables that potentially influence barriers and facilitators are age, gender, ethnicity, religion, language, NRPF or immigration status, food security, family size, including the number of children, habitation status (e.g., single-parent households) and those previously mentioned in the SEM. Although a universal definition of community in public health is not agreed on, its context has been identified as an important determinant of health outcomes. As such, I incorporated MacQueen’s five core elements of community—locus, sharing, joint action, social ties, and diversity. In simpler terms, the community level explored settings (e.g., neighbourhoods, workplaces, schools) in which social relationships occur and the characteristics of these settings. Together, these relationships and settings interacted with both the social and physical environments. Variables range from social networks to green spaces to living conditions to the geographical distribution of resources, including community organisations and religious institutions. The Systems level includes access to health services and local-, national- and global-level policies regulating healthcare, housing, social care, migration, poverty, resource allocation and government funding.

In this PhD specifically, these levels overlap where different environments exist and influence these barriers and facilitators: The Individual & Family, Housing, and Neighbourhood environments are built, and natural environments (Figure 2.2), which interact in both directions, as seen in the SEM and Health Map. After developing the concept map, I found other models, which fortified the same thinking and rationale behind the concept map that there could be social and environmental determinants but also political determinants of health. These determinants are interrelated but still different because there could be changes in the overall nation’s health but no change in the health inequalities that exist within
that population (i.e., U5TA). This could be caused by health inequity from national policies or financial insecurity of the under 5’s family.\textsuperscript{42,137,138} This concept map and theoretical underpinning fed into the epistemological stance and overall methodology.

2.4 Epistemological Stance and Overall Methodology

In this section, I explain pragmatism as my epistemological stance and overall methodology. I also describe the study setting, the five-phase methodological framework, and lastly, changes that were made due to the pandemic. Detailed materials and methods per phase are described in the corresponding chapter.

2.4.1 Pragmatism and Mixed Methods (MM)

This thesis is informed by Kelly and Cordeiro’s three principles of pragmatism\textsuperscript{139} for methodological inquiry with a mixed-methods (MM) design and an interdisciplinary approach to address the aims and ROs. These three principles are: “(1) an emphasis on actionable knowledge, (2) recognition of the interconnectedness between experience, knowing and acting and (3) a view of inquiry as an experiential process. (p. 3)”\textsuperscript{139} Pragmatism is not new and has been described as “an alternative, flexible, and more reflexive guide to research design.”\textsuperscript{139–142} It focuses on “what works” by tailoring methodological inquiry to “how and what respondents identify as working or not working” from the get-go (i.e. practical problem solving), which helps validate research questions and findings that are practically relevant.\textsuperscript{139,143} As a practice, pragmatism is a driver for new ways to search for meaning, knowledge and understanding.\textsuperscript{139} Furthermore, pragmatism is effective in mapping and translating research into policy and practice for a diverse range of communities, partners and organisations and, in some cases, promoting transformative social change.\textsuperscript{139} Therefore, these are useful characteristics to guiding methodological choices within applied research conducted within real-world settings that are complex and dynamic,\textsuperscript{139} which parallel with my overall thesis aims and ROs.
Pragmatism fed into the five-phase methodological framework (Section 2.4.3). A heuristic process was utilised to integrate all the aforementioned models from Section 2.3 to frame the study design of each phase and strengthen the interpretation of the findings, ensuring these were also balanced. Its application is discussed in the following chapters as to why the methodologies were chosen. By definition, the purpose of a heuristic inquiry is “discovery rather than proof” as it requires the individual researcher to engage in a process of internal search and in-depth interviews with people (i.e., co-researchers) who have lived experience of the phenomenon in question as does notions of pragmatism.

Mixed-methods (MM) designs and pragmatism are also complementary and often linked in that both enable researchers to engage with multiple experiences of studying the same phenomena and direct the inquiry towards adaptation and problem-solving. Similarly, MM designs are characterised by the combination of quantitative and qualitative components, including viewpoints, data collection, analysis, and/or interpretation with a framework to merge these components. The purpose of MM research is classified into five categories: triangulation, complementarity, development, initiation, and expansion. For this thesis, expansion was the main MM category used: “Expansion seeks to extend the breadth and range of inquiry by using different methods for different inquiry components”, which brings a range of frameworks and models (see Section 2.2) together to answer the research question; however there were elements of the other four categories used. In MM studies, qualitative methods can further help understand the quantitative data and previous findings while checking the validity of statistical findings and enriching the literature. In this PhD, the MM design with an interdisciplinary approach was ultimately adopted because it could capture the complex nature and multiple layers of the research question to gain a more comprehensive, complete picture.

Interdisciplinarity blurs disciplinary boundaries and prompts “reciprocal interaction between disciplines to generate new common methodologies, perspectives, knowledge or even new disciplines,” while still remaining in the framework of disciplinary research. The terms “multidisciplinary”, “interdisciplinary” and
“transdisciplinary” are often used interchangeably, but there are subtle yet significant factors that distinguish them. In simple terms, multidisciplinarity refers to different, distinct disciplines that study a research topic in parallel or sequentially, however without challenging their disciplinary boundaries. In comparison, transdisciplinarity transcends disciplinary boundaries to look at the dynamics of whole systems in a holistic way while involving scientists from different disciplines, non-scientists and other interested parties. As described by Nicolescu (2014), it “…concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines.” This thesis lies between interdisciplinary and transdisciplinary research as the boundaries have indeed been blurred amongst disciplines; however, a holistic approach was taken by the inclusion of the community impacted, various parties, professionals, and scientists to address the research aim and objectives.

2.4.2 Five-Phase Methodological Framework and COVID-19 Pandemic Adaptations

Both the original (pre-COVID) and the adapted methodological framework, i.e., the plan, had five phases. Each phase corresponded to one RO (Table 2.1). In this section, I briefly describe the five phases and corresponding chapters, COVID-19 pandemic adaptions made to the framework and prior planned public engagement work (Figures 2.3 and 2.4). Phases 1 and 2 followed the original framework (APPENDIX.S2.2-4). Phases 3 and 5 were redesigned, and Phase 4 was made broader with the methodology retained. Figure 2.5 shows the phases with the corresponding participants.
### Table 2.1 COVID-19 Modifications: Overview of Final Methodology and Study Design

<table>
<thead>
<tr>
<th>Aims</th>
<th>Research Objectives</th>
<th>Phase</th>
<th>Methodology</th>
</tr>
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</table>
|      | 1. To explore what is known about the range of barriers (e.g., political, social, cultural, economic, educational, environmental) to achieve optimal health and wellbeing in U5TA. | 1     | • Background literature Review  
• Systematic scoping review |
|      | 2. To explore the potential of citizen science approaches working with families of U5TA to identify environmental factors impacting health outcomes and health care service access. | 2     | • Citizen Science  
◊ Mobile app surveys  
◊ Collaborative Meetings  
◊ House visits  
◊ Transect walk |
|      | 3. To quantitatively explore the barriers and facilitators to health care access and wider social, political, and environmental of health during the COVID-19 pandemic for U5TA and their families. | 3     | • Online cross-sectional survey on pregnant women and families with under 5s |
|      | 4. To qualitatively explore how key professionals and decisionmakers perceive the experiences of U5TA in accessing health care and optimising health outcomes as well their own challenges providing services to the U5TA population before and during the COVID-19 pandemic. | 4     | • Qualitative interviews of health care professionals, housing experts, charities, and key decisionmakers |
|      | 5. To triangulate data sources from ROs1-4 to produce recommendations to present to health, social care and housing services and relevant sectors for policy change; and make recommendations for potential interventions tailored to the U5TA population and inform future multisector strategies and promote cross-sector collaboration. | 5     | • Triangulation and discussion of research findings from Phases 1-4 to create recommendations, some of which are co-produced  
• Share recommendations with interested parties |

Using mixed methods, this thesis aimed to:

- Better understand the barriers and facilitators to access health care services and optimise health outcomes among U5TA and their families in England;
- Evaluate what was the additive impact experience of the COVID-19 pandemic on health outcomes and access for U5TA and their families.
Figure 2.3 COVID-19 Modifications: Final Methodological Framework

- **Phase 1 Evidence Synthesis**
  - Background literature review
  - Scoping Review: Barriers and facilitators to achieving optimal health outcomes and to accessing health services for under 5s experiencing homelessness and living in temporary accommodation

- **Phase 2 Community Study**
  - Citizen Science
    - Mobile App Surveys
    - House Visits and Transit Walk
    - Collaborative Meetings

- **Phase 3 Families Study**
  - Quantitative Study
    - Online cross-sectional survey: social, economic and health impacts of COVID-19 on pregnant women and families with under 5s

- **Phase 4 Professionals Study**
  - Qualitative Study- Interviews
    - Health Visitors
    - Hosting Experts
    - Charities
    - Key Informants

- **Phase 5 Recommendations**
  - Critical assessment of PhD findings from Phases 1-4
  - Recommendations with co-production for policy, practice and intervention across different sectors

Phases 1-4 will inform Phases 2-5

Phases 1-4 will inform Phase 5
Figure 2.4 COVID-19 Modifications: Final Study Design Integrated with Concept Map

- **Phase 1:** Evidence Synthesis
- **Phase 2:** Community Study
  - Neighbourhood/Community Level
  - Barriers & Facilitators
  - Map
  - Transect Walk
  - Meetings
  - House Visits
  - Transect Walk

- **Phase 3:** Families Study
  - Individual/Family Level
  - Barriers & Facilitators
  - Housing
  - ActEarly
  - Survey Questionnaire
  - Families in Newborn Impacts of COVID-19

- **Phase 4:** Professionals' Study
  - Systems Level
  - Barriers & Facilitators
  - Professionals
  - Interviews
  - Health Visitors
  - Housing Experts
  - Key Informants
  - Charities
  - Community Influencers
In Phase 1, the Evidence Synthesis was composed of the background literature searches (Chapters 1-2) and the systematic scoping review (Chapter 3) to address RO1. Three focus areas were developed. I then systematically searched and reviewed available literature exploring barriers to achieving optimal health and cognitive outcomes in under 5s living in “temporary or insecure accommodation” in high-income countries (HICs).

**Phase 2**

In Chapter 4, I describe the Community Study, Phase 2. The community setting was an LBN-based charity, the Magpie Project. This phase consisted of three parts: a) socio-demographic characteristics of mothers visiting the charity, b) mapping via a smartphone app specifically designed for this project and transect walks, and c) meetings with the participants. The RO of this phase was to explore the potential of citizen science approaches as ways to work with fifteen families with U5TA to look at the environmental factors impacting health outcomes and health care access.
**Phase 3**

Using cross-sectional data of 2,204 families with under 5s and pregnant women in LBN, I quantitatively explore health care access, health outcomes and potential associated barriers and facilitators to optimising these during the COVID-19 pandemic for U5TA in **Phase 3 (Chapter 5)**, the *Families Study*.

I tested the hypothesis that living in TA and a longer duration of living in TA are associated with multiple childhood vulnerabilities. I compared these characteristics and experiences of families living in TA to those not living in TA (non-TA). I determined whether living in TA, and a longer duration of living in TA are independent predictors of poor self-reported parental mental health outcomes considering adjusted measures of housing environment, food security and socio-economic status. TA and time living in TA may not be the only explanatory factors for more severe symptoms of depression or anxiety as these barriers are complex. I also tested whether self-reported housing-related variables and certain socio-demographics were predictors for poor parental mental health outcomes. Such measures may have a relationship with parental mental health, implying that these barriers and/or facilitators co-existed and were multi-faceted.

**Phase 4**

Qualitative methods include interviews, focus groups, observations and photovoice. In recent years, qualitative methods have gained increasing popularity in health care settings because of their flexibility and adaptability throughout the entire research process beginning from the study design. These methods are also favourable to early career researchers to allow experiential learning and development at the same time. In **Chapter 6**, I report on **Phase 4**, the *Professionals Study*. Qualitative methods were best suited for **Phase 4** because they enabled in-depth exploration of the main thesis aims and RO4 by learning about key professionals’ experiences, perspectives, and histories while in-depth, detailed and explanatory findings organically emerged and built on from previous phases.
Phase 4 consisted of sixteen semi-structured interviews with health visitors, health professionals, housing experts, and other pertinent professionals currently working in LBN with a focus on system-level barriers. The original aim was to explore professionals' perspectives of the barriers and facilitators experienced by U5TA in accessing healthcare and optimising health outcomes, and the professionals' experiences in delivering services to this target population. In addition to this original focus and in response to the pandemic, I also explored the additional impact of pandemic-related challenges. The results from Phases 1-3 helped guide the questions for Phase 4.

Phase 5

Phase 5 (Chapter 7), the Recommendations, i.e., the Discussion chapter, draws on insights from Phases 1-4, elements of co-production, application of the frameworks described in Section 2.2, and the epistemological stance. I triangulated the recommendations from families in Phase 2 and professionals in Phase 4, together with all my findings, to generate a) a comprehensive set of policy recommendations across different sectors at the local, national, and global levels; and b) an evidence-based TA Standards Framework to propose to LBN and relevant parties. Lastly, I discuss directions for future research based on the findings from each phase.

The original Phase pre-pandemic descriptions are in APPENDIX.S2.5.

2.4.3 Study Setting

As part of the pragmatic approach, the London borough of Newham (LBN), East London was chosen as the case study setting. U5TA are highly vulnerable, and accessing families would inevitably be a challenge for a mobile, transient population. Although the setting was in LBN, e.g., recruitment, the context of this thesis captures a national-level issue. In 2018, I planned numerous types of primary data collection that relied on working and coordinating with cross-sector parties, such as getting names of families with U5TA from various local authorities, organisations and charities. However, this became more restricted with the introduction of new data
protection policies.\textsuperscript{157} As an individual researcher on an entirely new project, this setup had to be practical and manageable to be successful. In one borough (LBN), I could control for extraneous factors and work with cross-sector professionals who provided services to families. Furthermore, I was able to establish connections with the LBN local authority, charities, and health services. This enabled me to gain a complete picture of that borough rather than disjointed miscellaneous data scattered across the country, increasing the likelihood of non-representative or non-generalisable findings. Since this thesis was exploratory and I planned primary data collection with qualitative and qualitative components, I intentionally chose a small sample size. Therefore, it was also more appropriate to stay within LBN because a small national sample over a larger geographic area would increase the chances of variability, thereby reducing the statistical power, which could affect the reliability of the results.\textsuperscript{158,159}

**Socio-Demographics**

LBN is one of the most socially deprived and diverse populations in London and the UK, experiencing some of the worst direct impacts of COVID-19 thus far.\textsuperscript{160,161} According to the 2021 Census, 84\% of the borough comes from a non-White ethnic background with more than 100 different languages spoken.\textsuperscript{162} LBN had 23,900 (6.8\%) under 5s compared to 351,100 of the total LBN population size.\textsuperscript{161,163} Of the total population, 162,447 (46.2\%) were UK-born. Therefore, the majority of LBN residents are non-UK-born and 64.9\% were born in Europe.\textsuperscript{163} There were approximately 115,507 dwellings in Newham. In addition, over 25\% of households in Newham lived in overcrowded accommodation compared to a national average of 4.8\% and London average of 11.6\%.\textsuperscript{161,164} During this time, LBN had the second highest COVID-19 age-standardised mortality rate in the UK, at 201.6 per 100,000, vs. 90.9 per 100,000 in England, and 143.4 per 100,000 in London.\textsuperscript{165–167}

At the beginning of February 2023, 8167 children lived in TA in total of which 1656 were under 5s. In Table 2.2 below, supplied by the LBN local authority, shows the length of time U5TA had been living in their current TA. However, information was not provided regarding the type of TA i.e. B&B or hostel, so there was no way to
decipher if families exceeded the policy time limits or are living in long-term TA which the families are content with.

Table 2.2 Number of U5TA by Time Spent in TA

<table>
<thead>
<tr>
<th>Living Duration in Current TA</th>
<th>Number of Under 5s n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 6 months</td>
<td>328 (19.8)</td>
</tr>
<tr>
<td>Under 12 months</td>
<td>259 (15.6)</td>
</tr>
<tr>
<td>Under 2 years</td>
<td>459 (27.7)</td>
</tr>
<tr>
<td>Under 3 years</td>
<td>322 (19.4)</td>
</tr>
<tr>
<td>Under 4 years</td>
<td>166 (10.0)</td>
</tr>
<tr>
<td>Under 5 years</td>
<td>122 (7.40)</td>
</tr>
</tbody>
</table>

Poverty
According to End Child Poverty, the level of child poverty for children aged under 16 years in 2018/9 for Newham was 50.9% compared to 30.0% nationally (England) after housing costs. In both years 2019/2020 and 2020/2021, child poverty in Newham was consistent at 50% (1 in 2 children), and the national poverty rate remained the same.4,161,168–171

Poor Child Health Outcomes
Child public health problems have also persisted in LBN throughout the time of this thesis. These included high levels of child obesity, poor rate of dental health and poor immunisation uptake. In 2019, 29% of 5-year-olds had one or more decayed, filled, or missing teeth, which rose to 36.3% in 2021.172,173 Furthermore, LBN had consistently not met the 95% recommended coverage of the MMR immunisation level: by age two, only 82.9% of children had one dose in 2019 and 82.5% in 2021.172,173 In 2019/20, 80.5% of LBN children aged 2-2.5 years were at or above the expected level of development in all five areas (i.e. communication, gross motor, fine motor, problem-solving and personal-social skills), which was lower than the England average.173 Another concern was the rise in A&E attendance among children (0-4 years) in 2018/19, which has continued an upward trend, higher than the England average: a crude rate of 822.5 per 1000 compared to 655.3 per 1000 respectively.172,173
LBN was selected as the primary setting because it has the highest number of homeless households in TA in London and England, as well as the highest number placed outside the borough (i.e. relocated out of LBN for TA provided). In 2018, LBN was in the top three ranked regions in England, leading the rate of children that were homeless in TA (n= 7,326), approximately 1 per 12 children. At this time, The Guardian reported that Newham’s Housing Department accommodated 1,996 under 5s.

During the pandemic in 2020, LBN had the highest rate of TA in London and England, with 49.1 households per 1,000 households. In 2021, LBN was still ranked #1 for the highest local rate of homelessness in England (1 in 22 people) and 1 in 11 children living in TA. By the end of December 2020, a total of 5,664 Newham households were living in TA (3,860 of which had children) compared to the 5,280 Newham households living in TA (3,768 with children) at the end of December 2019, an overall 7.3% increase (2.4% increase). Over the same time period, there was a similar increase (7.7%) across England in the total number of households living in TA however, there was a 5.0% decrease in the number of households with children in TA compared to the previous year.

However, as described in Chapter 1, these statistics were probably underestimated because of the transient nature of homelessness especially hidden homelessness, and since these data were only captured quarterly. As a result, many children may not be accounted for because they are “off the grid” and/or not registered with local health services, especially with children under five and/or who are not in school yet.

2.5 Impact of COVID-19 Pandemic on Thesis
Here, I briefly describe the overall impact of the pandemic on the thesis and chronology (APPENDIX.S2.2). In March 2020, Phase 2 was still in progress, with Phase 3 due to start imminently when the global COVID-19 pandemic was declared. The original Phase 3 consisted of focus groups, surveys, and interviews checked for acceptability and feasibility with potential participants from Phase 2 and this work
had already been cleared by ethics prior to the pandemic. See APPENDIX.S2.6 for the original survey materials.

The Magpie Project (Magpie) closed in March 2020 and was not scheduled to reopen until September 2020 due to social distancing regulations, so I could not access participants. Furthermore, many of the participants from Phase 2 were unreachable as their circumstances drastically changed, with many relocated outside LBN. I had previously communicated with my research participants through the research mobile phones purchased through a grant I won with Magpie. However, the phones had to be reallocated due to emergency and priority in these unprecedented circumstances, and the SIM cards were replaced at the beginning of the pandemic. At that point, Phase 2 prematurely concluded, and I had to analyse the data collected thus far. I was unable to finish house visits and unable to retrieve socio-demographic data from the charity (COVID Impact forms, APPENDIX.S2.7 and 8).

When the pandemic hit and halted everything, I shifted my thinking about the current barriers and facilitators I had found in the evidence and preliminary findings to question how these might be altered during the pandemic and the potential effect on U5TA and their families. Following this, I added a third thesis aim, redesigned my methodological framework and revised my ROs with updated methodologies to incorporate the occurrence of COVID-19. The original ROs were focused on mothers’ experiences with their under 5s since mothers were the service users at the case study site (Magpie); however, with the redesign of the study, the whole family unit was included, but I was unable to maintain the participatory approach and co-production aspect, as initially planned (APPENDIX.S2.1 and 5). The adapted Phases 3 and 4 took place simultaneously. Initially, Phase 3 data were going to be used to inform Phase 4, but that modification had to be made as a result of the revised timeline.

Due to COVID and social distancing restrictions in place at Magpie, the logical step was to find a suitable alternative. I found the UKRI-COVID Rapid Response grant and suggested to my supervisors that I write and put in a proposal based on my
preliminary findings and methodological framework as well as an article I had just written and published in the *Lancet Public Health*. I already found numerous barriers in my preliminary analyses of **Phase 2**, and my proposed aim was to determine how COVID could be exacerbating these barriers and what new ones have emerged. As originally intended for **Phase 5**, my new RO5 was to co-develop an information toolkit with families living in TA and key professionals in health and social care to address their short-term and long-term needs once the lockdown period ends, and there is an effort to return to "normalcy" while at the same time. If successful, this work from this grant would substitute for the data I had lost and provide a stable plan for the remainder of the thesis. With permission from my supervisors, I led the writing of the grant proposal and the overall design of the study, and I was named a Co-Investigator and Co-Lead of the study. I specifically designed the quantitative survey to use in **Phase 3**. Unfortunately, I was not given access to any of the work I did on the UKRI study when it was successfully funded.

Given the difficulties of accessing the UKRI findings, I worked with another research group that was investigating "**COVID-19: Families, children aged 0-4 and pregnant women: vulnerabilities, resources and recovery in Tower Hamlets**" because they later extended into LBN. To support this work and to ensure sufficient data from families living in TA, I helped facilitate recruitment from families living in TA. Despite these setbacks or roadblocks, I overcame these challenges to answer the research questions and deliver the best thesis I could with the resources I had although not ideal for addressing my aims.

*Public Engagement Work*

Early in the PhD, I acquired public engagement training through UCL's Train and Engage programme for postgraduates. In order to complement the data collected in **Phase 2** and work with the LBN community, I created a public engagement component for the PhD. Since I was unable to reach the families from **Phase 2** in those unprecedented circumstances, as explained above, I did not complete this body of work, which was a vital part of the PhD and my training. These were the specific measurable aims:

1. To monitor engagement and assess the impact of the exhibition on public awareness of child homelessness, the barriers to accessing health care
services and trying to ensure children experiencing homelessness are reaching milestones in suboptimal housing environments.

2. To increase the exhibition attendees’ knowledge of child homelessness and the Healthy Child Programme, also known as the Gold Standard of milestones in the UK. Furthermore, to improve their understanding of homelessness definitions and what classifies as “homeless” in order to change their perception of homelessness.

3. To evaluate the effectiveness of a multimedia art and science exhibition approach on public engagement with awareness and knowledge of, homelessness, which ties into the mixed methods of my research by incorporating both qualitative and quantitative data in the evaluation using a graffiti wall.

4. To empower mothers experiencing homelessness by providing a platform and opportunity to use their voices related to their child’s health through the exhibition and to develop transferable skills through working on the main exhibition piece: an embroidered map quilt.

A co-created exhibition had already been planned for the Summer of 2020 but was cancelled. (See APPENDIX. Public Engagement for the full proposals, successful applications that were awarded and work that had been in progress).

2.6 Chapter Summary and Thesis Structure

- In this chapter, I presented the thesis aim, rationale, hypothesis and five research objectives.
- One framework or model alone could not capture the complex, multifaceted nature of homelessness and its relationship with child health.
- There were four main models which made up the theoretical underpinning of this thesis: the Social Ecological Model, the Health Map for the local human habitat, Maslow’s Hierarchy of Needs, and the Settings Framework.
- Using these theoretical frameworks together with the background (Chapter 1) and Scoping Review (Chapter 3), a concept map was developed which fed into the five-phase thesis framework and the methodological tools.
• Pragmatism was my epistemological stance for methodological inquiry using a mixed-methods (MM) design and an interdisciplinary approach to address the aim and ROs.

• Both the original and the adapted methodological frameworks, i.e., the plan, had five phases. Each phase corresponded to one RO (Table 2.1). The following chapters correspond to one of the five phases.
  o Chapter 3-Phase 1: Evidence Synthesis- systematic scoping review (and prior literature review in Chapters 1-2)
  o Chapter 4-Phase 2: Community Study- citizen science
  o Chapter 5-Phase 3: Families Study- cross-sectional study
  o Chapter 6-Phase 4: Professionals Study- qualitative study
  o Chapter 7-Phase 5: Recommendations- discussion and outputs

• As part of the pragmatic approach, the London borough of Newham (LBN), East London, was chosen as the case study setting although the context of this thesis was national.

• The COVID-19 pandemic resulted in adaptations made to the methodological framework and cancelled the public engagement work.
Chapter 3
Phase 1. Evidence Synthesis

3.1 Chapter Overview

The first part of Phase 1 (Chapters 1-2) provided the background and concept map for the second part. In this chapter, I address RO1 by conducting a systematic scoping review.178

1) The primary objective of this review was to answer the question:

   What is known about the barriers (e.g., political, social, cultural, economic, educational, environmental) to optimising health and wellbeing (e.g. cognitive outcomes) in under 5s living in temporary or insecure accommodation in HICs? Are there any facilitators that helped mitigate these barriers?

2) The secondary objectives were to:

   a. determine how homelessness is defined across research studies, and 
   b. identify validated measures and/or instruments that are used to measure the aforementioned barriers.

3.2 Methods

3.2.1 Study Design

The Preferred Reporting Items for Scoping Reviews checklist (PRISMA-ScR)179 was used to conduct this review to ensure I followed a systematic process.178 A quality assessment of the studies was undertaken using the Center for Evidence-Based Management (CATS) framework180 as recommended during my MPhil/PhD upgrade examination. This framework was also 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 twice, once in June 2020 and finally in March 2023. A narrative approach was used to synthesise the results.25 Of note, the output of the initial search and synthesis was published in 2021.25 Given the time span from initial
search (2019) to the completion of the body of work presented in this thesis (2023), I updated this scoping review and integrated the findings into this chapter.

3.2.2 Search Strategy and Selection Criteria

The review was operationalised using the PICOC method (populations, interventions/exposure, comparators, outcomes, context). In many review types, PICOC can be adapted and used as a tool to help develop a well-defined practical research question and formulate the relevant inclusion/exclusion criteria and search terms. Given the complexity of this thesis, PICOC helped simplify and structure the variables that needed to be considered for this review.

<table>
<thead>
<tr>
<th>PICOC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Children under age 5 experiencing homelessness and/or their parents in temporary or insecure accommodation</td>
</tr>
<tr>
<td>Intervention/Exposure</td>
<td>Temporary or insecure accommodation, shelters, bed-and-breakfast, council housing; barriers</td>
</tr>
<tr>
<td>Comparison</td>
<td>HICs; facilitators; stable housed families (if applicable)</td>
</tr>
<tr>
<td>Outcome</td>
<td>Optimal health outcomes e.g., achieving milestones</td>
</tr>
<tr>
<td>Content</td>
<td>Shelters, community organisations, settings approach, hospitals</td>
</tr>
</tbody>
</table>

Only primary research studies or reviews of primary research studies were included in order to identify validated measures and instruments used to assess the barriers and facilitators to optimising health outcomes and to define homelessness. The following databases were searched: Medline, PubMed, Embase, CINAHL, Web of Science, OVID Maternity and Infant Care, and The Cochrane Library (publications dates from Jan 1, 1980, to Mar 26, 2023) in English using the keywords and MESH headings found below and additional filters which varied by each database. Keywords on specific health outcomes and facilitators were not included in the search because they either yielded zero results or numerous articles that were not relevant to the research question. Since these databases were health- and science-based, I purposely kept the search broad and open-ended. Example keywords and MeSH Terms are listed below, while the full search strategies per database are in APPENDIX.S3.
<table>
<thead>
<tr>
<th>Keywords and MeSH Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&quot;vulnerable children&quot; OR &quot;children under five&quot; OR &quot;children under 5&quot; OR &quot;children age five or younger&quot; OR &quot;under-fives&quot; OR &quot;child homelessness&quot; OR &quot;homeless children&quot; 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)</td>
</tr>
<tr>
<td>AND</td>
</tr>
<tr>
<td>(&quot;short term accommodation&quot; OR &quot;short term housing&quot; OR &quot;temporary accommodation&quot; OR temporary housing &quot;OR &quot; insecure housing &quot;OR &quot; insecure accommodation&quot; OR homeless OR homelessness OR housing)</td>
</tr>
<tr>
<td>AND</td>
</tr>
<tr>
<td>(&quot;barriers&quot; OR &quot;social segregation&quot; OR &quot;social exclusion&quot; OR &quot;exclusion&quot; OR &quot;social isolation&quot; OR &quot;communication&quot; OR &quot;Interpersonal Relations&quot; OR &quot;interactions&quot; OR &quot;engagement&quot; OR &quot;engage&quot;)</td>
</tr>
</tbody>
</table>

All HICs were included (as defined by the World Bank). Since child homelessness is a global issue, consistently present throughout the Global North and South, I wanted to make comparisons that were in similar economic standing to OECD countries as the UK. The inclusion and exclusion criteria were as follows:

**Inclusion Criteria**

- Under 5s (children age: birth < 5 years) in the study sample OR parents of under 5s;
- High-income countries, as defined by the World Bank at the time of search;
- Primary research studies (no study designs excluded) or reviews of primary research studies;
- Library (publications dates from Jan 1, 1980, to March 26, 2023) in English;
- Exposure: Temporary or insecure accommodation, shelters, bed-and-breakfast, council housing;
- Outcome: health or health services access for under 5s OR their parents if it had implications on their child’s health in the study.
Exclusion Criteria

- The full text was not available (e.g., abstract only); however, if the abstract contained sufficient information to fill out the data extraction sheet, it was included.
- 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;
- Not in a high-income country;
- Grey literature, pre-prints, not a primary research study or a review of primary research study.  

I also hand-searched the Evidence Gaps Database produced by the Centre for Homelessness Impact and, later, the studies within full-text reviews (Figure 3.1). As discussed in Chapter 1, there is no universal definition of homelessness in addition to a lack of standardisation among definitions and metrics across reports. All definitions of homelessness, except ‘rough sleeping’ variations, were utilised in the search to avoid missing any potential studies. However, only studies that met the inclusion criteria (temporary or insecure accommodation, shelters, bed-and-breakfast, council housing) were extracted for full paper review.  

3.2.3 Data Extraction and Analysis

All references were imported into the Mendeley reference software. Any duplicate studies were noted and then removed from the total studies assessed (if these hadn’t been removed previously by the databases)(Figure 3.1). Articles were first scanned and evaluated by title and abstract using the inclusion criteria. I then obtained the relevant full-text articles of the included abstracts to assess for final eligibility. Any articles that did not take place in HICs were excluded, which was checked manually to ensure a wide net was cast on the search, which could then be tapered down. Any articles that were in question were resolved through a discussion of the CATS framework by me and Dr Celine Lewis (subsidiary supervisor).
A standardised data extraction form was used to collect data on study design, country, sample characteristics, age of children, definitions of homelessness, methodology, measures and instruments used, inclusion and exclusion criteria, data-analysis methods, interventions and outcomes\(^\text{186}\) as well as the reported barriers to optimising health outcomes and/or accessing health care services. I also noted any facilitators if present. Data were extracted and organised into an Excel document by study design and methodological appropriateness according to CATS (**Table 3.2**).\(^\text{25,180}\) As shown in **Table 3.2**, the methodological appropriateness level was only relevant in assessing studies that investigate a cause-and-effect relationship. However, if the research question had a non-impact/non-effect question, e.g., the prevalence of the phenomenon(s), the most appropriate design may be a cross-sectional study, either quantitative or qualitative.\(^\text{180}\) AA and A levels are the highest ranks of methodological appropriateness (i.e., the gold standard), and E was the lowest rank.\(^\text{180,187}\) A longitudinal study was classified in the same category as a cross-sectional study (survey). The quality of the study methodology did not factor into whether these studies were included/excluded, but the strengths and limitations of each article were analysed using the Joanna Briggs Institute Critical Appraisal Tools.\(^\text{188}\)

Results were analysed thematically as described by Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005,\(^\text{189}\) so that I could inductively identify important themes among the included papers and then apply these findings to the concept map as described in **Chapter 2** using a Venn diagram (**Figure 3.2**). Barriers were described at the individual and family level (e.g., race or ethnicity, immigration status, and fear), community level (e.g., neighbourhood environment and poor housing conditions) and systems level (e.g., poor access to medication, absence of care plan, and no insurance).\(^\text{24,25}\) Given the considerable heterogeneity of methods and outcomes, a narrative approach was selected as the most appropriate synthesis method, which involved the selection, chronicling, and ordering of evidence.\(^\text{25}\)
3.3 Results

A total of 3402 articles published between January 1, 1980, and March 26, 2023 were identified. 755 duplicates were removed, including several duplicates of articles I had published since the initial search, which left 2647 records to be screened. Of those, 164 full-text articles were retrieved and assessed. Articles were excluded \( (n=121) \) for reasons including: the full text was not available \( (n=23) \); the study did not involve under 5s and/or their parents \( (n=37) \); the study did not take place in a HIC \( (n=5) \). In general, under 5s were rarely studied as a discrete age group and often combined with older ages (e.g., ≤ 28 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 \( (n=26) \) Lastly, studies were excluded if they satisfied two or more of the previous reasons for exclusion \( (n=29) \) or not a research study \( (n=1) \). (PRISMA Flow Diagram, Figure 3.1).
Forty-three full texts from HICs were included in the final synthesis (Table 3.1). The most commonly used study designs according to the CATS classification were
cross-sectional \((n=22)\), followed by case studies, case reports, traditional literature reviews, and theoretical papers \((n=10)\) (Table 3.2). There were no AA-level studies e.g. systematic review or meta-analysis of randomised controlled studies. The majority of included studies were based in the USA \((n=30; \sim70\%)\) followed by the UK \((n=8)\), France \((n=2)\), Canada \((n=2)\) and Ireland \((n=1)\). One-third of the studies were conducted prior to the year 2005 \((n=14)\)—this trend was also present within the excluded texts. In the latest search from March 2023, \(n=15\) had been published since 2020.

**Characteristics of Studies**

Each included text had limitations which impacted the described study outcome(s). These limitations are reported in Table 3.1. Some studies did not use representative samples, used sample sizes with convenience sampling and did not use “true” controls but rather comparison groups, which may potentially reduce the generalisability of the findings, including possibly overestimating health outcomes and barriers among certain homeless populations. Many quantitative and qualitative studies did not include socio-demographic data (e.g., age, household structure, education, disability, immigration status) or did not analyse it in relation to ethnicity or subpopulations, which is important to determine which priority groups are most at risk. Even more so, every study used a different definition of homelessness and this limited the ability to make international comparisons across studies, including risks and rates. Some studies provided no definition, while some others (US-based) were specific, citing the definition from the McKinney-Vento Homelessness Assistance Act. (Table 3.3) Studies measured similar health outcomes; however, only some used validated measures, and for those that did, there was a range of different measures used for the same variables, which limited comparability. For example, some validated instruments and measures included: 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. These measures and the definitions of homelessness used in each study are reported in Table 3.3.
Table 3.1 Descriptive Characteristics of Included Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Study Design (CATS appraisal)</th>
<th>Country</th>
<th>Sample/Population</th>
<th>Age of Children</th>
<th>Barriers (Characteristics)</th>
<th>Limitations</th>
</tr>
</thead>
</table>
| 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. (2018)   | 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 | • Larger sampling frames  
• One-sided: only looked at parental perceptions  
• 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 |
<table>
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<tr>
<th>Author</th>
<th>Study Design (CATS appraisal)</th>
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<th>Barriers (Characteristics)</th>
<th>Limitations</th>
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</thead>
<tbody>
<tr>
<td>Victor et al. (1989)</td>
<td>C (controlled study without a pretest)</td>
<td>UK</td>
<td>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</td>
<td>0-14 yrs.</td>
<td>• Fear of danger from other shelter residents • Unlikely to be registered with GP due to lack of non-temporary house address or difficulty getting registered if still registered in another borough; • Need to rely on acute emergency services • Budget constraints</td>
<td>• 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</td>
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<tr>
<td>Bassuk et al. (1990)</td>
<td>E (case study, literature review)</td>
<td>USA</td>
<td>• Sheltered mothers and children</td>
<td>Approximately two-thirds of the children were preschoolers, &lt; 5 yrs.</td>
<td>• 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</td>
<td>• 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 &quot;new&quot; analysis and what was done previously in their past studies</td>
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<tr>
<td>Author</td>
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| Agustin et al (1990)   | E (review)                    | USA     | Homeless Children                                      | Varied; ages 1-5 yrs. separated | • Unfamiliar with their neighbourhoods  
• 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 yrs. were living in the hostel and of these, 26 were under 5 yrs. | under 18s; under 5s separated | • 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 |
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<tr>
<td>Wiecha et al. (1991)</td>
<td>E (literature review)</td>
<td>USA</td>
<td>Single adults: late 20s to 30s Families with children: parents, mid to late 20s; children, 50 percent younger than 6 yrs., 67-92 percent younger than 5 yrs.</td>
<td>&lt; 6 yrs.</td>
<td>Lack of medical insurance or money</td>
<td>Studies found did not use representative samples and did not validate self-reported nutrition and health data</td>
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<td>Lack of transportation</td>
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<td>Mistrust of hospitals and health care providers</td>
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<td>Belief that conditions are not serious enough to warrant intervention</td>
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<td>Inability or lack of desire to participate in therapy owing to mental illness</td>
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<td>Some providers are reluctant to treat the homeless</td>
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<td>Medication adherence because of inability to obtain or store medications, or because of the lack of privacy for using them</td>
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<td>Parsons (1991)</td>
<td>C (controlled study without a pretest)</td>
<td>UK</td>
<td>Hackney and Tower Hamlets-4 groups:</td>
<td>infants and under 5s; school aged children ≥ 5 yrs.</td>
<td>Living in temporary accommodation for extended periods of time</td>
<td>Had 3 &quot;control groups&quot; - not really controls but comparison groups;</td>
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<td></td>
<td>• Born and bred</td>
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<td>Low birthweight</td>
<td>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</td>
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<td>• Moved in</td>
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<td>Limited mobility in terms of access</td>
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<td>• Finsbury Park residents</td>
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<td>Cultural values</td>
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<td>• Tower Hamlets residents</td>
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<td>Overcrowded housing</td>
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<td></td>
<td>Theoretical barriers related to housing-diet, damp, stress, lack of sunlight, susceptibility to infections, depression and even genetic selection</td>
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<td>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</td>
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</table>
| 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 18s         | • 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 |
| 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 yrs. 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 |
<p>| Burton, G., Blair, M., &amp; Crown, N. (1998) | UK | E (case study) | £5 yrs. | • A group of five-year-olds who had experienced homelessness and compare them with matched 'non-homeless' controls | • 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, so potentially not a true control • Measuring morbidity at the school health interview was subjective because it relied on a school nurse interview but not using standardised measurement tools • Excluded disabled children • Recall bias - measures for 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; using housing register to sample implies that the wider population in TA was not considered |
| Kidd, S. A., &amp; Scrimenti, K. (2004) | USA | D (cross-sectional) | &lt;17 yrs. | • 170 homeless families in New Haven | • 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 |</p>
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</table>
| 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. (1990)        | E (case study)                | USA     | • 72 homeless families, and 87 homeless preschool 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 sheltering system  
  • Lack of continuity of health care  
  • Lack of continued monitoring of child abuse cases was impossible because no policies 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, immigration 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 (interrupted 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 behaviour,  
  • Parental depression and anxiety  
  • Environmental changes  
  • Feelings of isolation  
  • Lack of a support network  
  • Broken relationships, family breakdown, or, especially in the case of refugee families, dislocation, violence, or loss | • There were number of confounding factors in this study  
  • The BSID measure may be subject 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/exclusion criteria in recruitment process at hostels or what defines a hostel. |
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<tbody>
<tr>
<td>Shinn, M., Samuels, J., Fischer, S. N., Thompkins, A., &amp; Fowler, P. J. (2015)</td>
<td>A (randomised controlled trial (RCT); comparison group- usual care)</td>
<td>USA</td>
<td>• 200 newly homeless families (and 311 children) in which mothers had diagnosable mental illness or substance problems</td>
<td>1.5–5 yrs., 6–10 yrs., and 11–16 yrs.</td>
<td>• Continuity of services • Transfer to Care, the case manager reduces contact further, as families are encouraged to take full responsibility for accessing services</td>
<td>• Small sample size- small numbers 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 mental illness or substance problem</td>
</tr>
<tr>
<td>Benbow et al. (2019)</td>
<td>E (critical narrative study; a critical feminist perspective)</td>
<td>Canada</td>
<td>• 26 mothers experiencing homelessness 15 service providers who provided care to mothers experiencing homelessness</td>
<td>majority of children were &lt; 5 yrs. (60%)</td>
<td>• Lack of access to resources and services • Difficulty navigating the system • Internalized expectations and regulations • Hierarchy of exclusion • Feelings of shame, blame, and despair; feeling defeated and not being a good enough mother</td>
<td>• Restriction to an English-speaking population • Challenges of following up with second interviews due to changes in accessibility and complexity of life situations</td>
</tr>
<tr>
<td>Brown and Chatterjee (2018)</td>
<td>E (literature review)</td>
<td>USA</td>
<td>• 50 to 280 participants</td>
<td>&lt; 13 yrs.</td>
<td>• Lack of access to cooking &amp; storage resources in shelter environment • High cost of healthy foods • Little access to healthy eating options</td>
<td>• The majority of studies were cross-sectional using convenience samples</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Author</th>
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<tbody>
<tr>
<td>Buu et al. (2014)209</td>
<td>E (case study)</td>
<td>USA</td>
<td>Caregivers (sheltered parents)- all spoke fluent English, racially and ethnically diverse, ages 31-53 yrs. with majority of children enrolled in Medicaid and shelter staff</td>
<td>19 months - 24 yrs.</td>
<td>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</td>
<td>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</td>
</tr>
<tr>
<td>Chatterjee et al. (2017)210</td>
<td>D (survey, cross-sectional)</td>
<td>USA</td>
<td>169 organizations that provide services to children funded by the Health Resources and Services Administration’s Health Care for the Homeless Program</td>
<td>&lt; 18 -25 yrs.</td>
<td>Lack of time, knowledge, and local/state resources • Immigration status • Barriers to meeting recommendations • Lack of care plan integrating comprehensive and acute care</td>
<td>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 yrs. of age, some homeless youth service providers served those up to age 25 and may have included services for young adults in their responses</td>
</tr>
<tr>
<td>Study Authors</td>
<td>Study Type</td>
<td>Country</td>
<td>Sample Description</td>
<td>Findings</td>
<td>Limitations</td>
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<td>Edwards et al. (2017)</td>
<td>D (descriptive; cross-sectional; qualitative)</td>
<td>Canada</td>
<td>• 9 mothers: 24 yrs. of age or younger of a single infant 6 months of age or younger</td>
<td>• Inadequate prenatal information • Challenges of early breastfeeding • Family influence and peer support • Maternal mental health • Importance of early postpartum support • Importance of ongoing support</td>
<td>• 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</td>
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<tr>
<td>Jetelina et al. (2018)</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>• 6492 primary caregivers of children in five counties of Dallas, Texas</td>
<td>• 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</td>
<td>• 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</td>
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<tr>
<td>Reilly et al. (2018)</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>• NYC homeless shelter residents and public housing residents</td>
<td>• Young age of mothers • Race and ethnicity • Place of birth (Shelter-born) • Breastfeeding • Lack of income</td>
<td>• 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</td>
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<td>Luchenski et al. (2018)</td>
<td>A (systematic review)</td>
<td>UK</td>
<td>People with experience of homelessness, substance use disorders, imprisonment, or sex work in high-income countries</td>
<td>&lt; 25 yrs.</td>
<td>Fear</td>
<td>Didn't specifically focus on families or potentially issues under 5s may face although they were included</td>
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<td>Poor awareness and judgmental attitudes of services</td>
<td>Limitation of literature- the breadth and diversity of interventions- could only use narrative approach</td>
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<td>Restrictive requirements to access services (e.g., proof of address or proof of benefits)</td>
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<td>Language, communication, and cultural barriers</td>
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<td>Negative stereotyping by the media</td>
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<td>Stigma and public misconception</td>
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<td>Geographical lottery and health service funding controls</td>
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<td>Services prioritise certain groups over others (e.g., difficult to get housing support as a single working-age male)</td>
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<td>Difficulties in maintaining hygiene and resultant body odour</td>
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<td>Legal status, immigration, or asylum</td>
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<td>Scarcity of information, poor knowledge</td>
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<td>Care avoidance</td>
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<tr>
<td>Murrell et al. (2000)</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>Women enrolled in the project ages 15-40 yrs. who were pregnant or parenting an infant six months old or younger (N = 79)</td>
<td>&lt; 6 months</td>
<td>Temporary or insecure housing, Unemployment</td>
<td>Nonexperimental study</td>
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<td>Child care</td>
<td>Survey mainly used in evaluating the AfterCare Project program and to plan for future provision of services</td>
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<td>Family stability</td>
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</tbody>
</table>
| Vandentorren et al. (2016)²¹⁶ | D (cross-sectional)           | France  | • A random sample of 801 families sheltered homeless families in 2013; ENFAMS Survey | < 13 yrs.       | • 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)²¹⁷      | D (cross-sectional)           | France  | • A random sample of 801 families sheltered homeless families in 2013; ENFAMS Survey Two stratified child age groups; 0.5–5 and 6–12 yrs. | | • 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)²¹⁸       | D (cross-sectional)           | USA     | • Children’s HealthWatch Study 9,980 mothers of infants younger than 12 months were surveyed at emergency departments and < 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 |
<p>| Bovell-Ammon et al. (2020)(^{219}) | A (randomised-controlled study) | USA | • Families experiencing one or more adverse housing circumstances: being homeless in the previous year, having moved multiple times in the previous year, having been behind on rent in the previous year, and using more than 50% of the household income to pay for rent | • Adverse housing circumstances and instability  • Multiple moves  • Parental mental health  • Child or parent defined as “medically complex” i.e., used more health services than usual or had a chronic disease or disability  • Socio-demographics e.g., single-parent households, ethnicity, unemployed parent, etc. | • Small sample size and loss to follow-up  • Limited validity  • Not age-stratified; age of children not provided in eligibility criteria  • Mostly self-reported measures  • Not all child health outcomes were reported based on the survey used/only used parts of that survey - National Health and Nutrition Examination Survey |
| Rubenstein et al. (2022)(^{220}) | D (cross-sectional) | USA | • Students with and without disabilities experiencing homelessness by county and school district in Massachusetts | • 24.8% of students experiencing homelessness had a reported disability  • Results potentially show that homelessness may be caused by financial costs of disability  • Educational challenges | • Results were not age-stratified and only presented as one whole group  • Secondary data analysis and mainly descriptive i.e., prevalence  • Lack of detailed data analysis primarily due to what was available  • Lack of socio-demographics which may be provide important context |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Country</th>
<th>Population Details</th>
<th>Age Range</th>
<th>Findings/Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatef et al. (2021)</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>Patient population of an academic medical centre (Johns Hopkins Health System)</td>
<td>0-85 yrs. Age strata: 0-17 yrs.</td>
<td>Housing instability and homelessness • Number of comorbidities • No insurance • 0-17 yrs. findings not presented in the results • Wide age range, so prevalence of under 5s is unknown • Secondary data analysis of EHR data, which limits the type of variables collected • Inconsistencies of coding terminologies to identify data types • Utilisation of health care may not be representative because it only reflects one network</td>
</tr>
<tr>
<td>Fanning (2021)</td>
<td>E (literature view)</td>
<td>USA</td>
<td>Infants and toddlers experiencing homelessness</td>
<td>Infants and toddlers (aged 0–36 months) within the sample, so age range up to 18 yrs.</td>
<td>Limited space or lack of safe space for play and exploration • Increased family separations, • Parent/caregiver mental health • Food preparation challenges • Cumulative impacts of additional risk factors e.g., such as poverty and parental incarceration • Increased health care costs and emergency department visits • Did not have a formal systematic methodology including when search was conducted • Did not have a clear inclusion criteria • Was published after my book chapter and scoping review, so it’s doesn’t fill an evidence gap/contribute to the literature • Only included 14 examples when there are more in the literature and only included US studies</td>
</tr>
<tr>
<td>Jenkins et al. (2023)</td>
<td>D (cross-sectional)</td>
<td>Ireland</td>
<td>Children born in the maternity hospital for whom child welfare and protection concerns had been reported over a five-year period from 2016 to 2020</td>
<td>Not clear but under 5s included if born during this period</td>
<td>Maternal mental health and addiction issues • Trauma including domestic violence • Neonatal abstinence syndrome, and infants born to mothers positive for transmittable infections e.g., hepatitis C and HIV • Missed appointments including vital follow-ups • Born premature and have low birthweight • Formula-fed • Study design was not clearly identified- the terminology used was “multidisciplinary retrospective audit” • Age profiles of the 99 children identified were not reported • No real-time data, so limited representativeness and generalisability • Missing data from health records, which isn’t possible to collect retrospectively</td>
</tr>
<tr>
<td>Author</td>
<td>Study Design (CATS appraisal)</td>
<td>Country</td>
<td>Sample/Population</td>
<td>Age of Children</td>
<td>Barriers (Characteristics)</td>
</tr>
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<tr>
<td>Slesnick et al. (2023)</td>
<td>A (randomised-controlled study)</td>
<td>USA</td>
<td>Young mothers (18-24 yrs.) caring for a biological child &lt; 6 yrs., experiencing homelessness and with a substance use disorder</td>
<td>&lt; 6 yrs.</td>
<td>Financial instability • Maternal mental health and substance misuse • Access to support for children • Number of children in household • Length of current homelessness</td>
</tr>
<tr>
<td>Gennaro et al. (2021)</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>Parents of children (19-35 months old) accessing any of 10 locations serving families experiencing homelessness</td>
<td>19-35 months</td>
<td>Scheduling difficulties and transportation issues • Caring for other children • Multi-dose vaccinations- remembering when vaccines are due • Getting or keeping insurance • Finding a doctor • Cost of appointment and/or vaccine</td>
</tr>
<tr>
<td>Grattan et al. (2021)</td>
<td>C (systematic review of quantitative research articles with</td>
<td>USA</td>
<td>Young people (ages 0–25) in Western countries</td>
<td>0–28 yrs. in included studies</td>
<td>Risks factors, but also looked at resilience factors • Family instability or conflict • Household characteristics e.g., single-parent, marital status of parent</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Country</td>
<td>Sample Characteristics</td>
<td>Negative Findings</td>
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<tr>
<td>Nobari and Whaley (2021)&lt;sup&gt;227&lt;/sup&gt;</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>Children participating in the Special Supplemental Nutrition Program for WIC in Los Angeles County</td>
<td>Children's ages were reported but no other demographics</td>
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<tr>
<td></td>
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<td>Parenting stress, recent family adversity, worse social-emotional functioning displayed by child, types or lack of social support</td>
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<td>Limited by study design—would have benefitted from longitudinal design</td>
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<td>Small sample, which may not be generalisable beyond urban setting</td>
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<tr>
<td>DeCandia et al. (2021)&lt;sup&gt;228&lt;/sup&gt;</td>
<td>C (controlled study—pilot of assessment tool)</td>
<td>USA</td>
<td>Caregivers of children (3–5 yrs.) living in poverty and experiencing homelessness</td>
<td>First screening tool of its kind so it’s not comparable</td>
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<td>Small sample size for test-retest</td>
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<td>No appendices showing the actual screening tool or questions</td>
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<td></td>
<td>No child demographics although results were adjusted for age</td>
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<tr>
<td>Owens et al. (2022)&lt;sup&gt;229&lt;/sup&gt;</td>
<td>D (cross-sectional, qualitative)</td>
<td>USA</td>
<td>Parents of children enrolled in a larger study on the effects of a parenting intervention delivered in a shelter</td>
<td>Converage sampling from one shelter</td>
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<td></td>
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<td>Did not capture child’s perspective</td>
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<td></td>
<td>Children’s ages were reported but no other demographics</td>
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<td></td>
<td>Large qualitative study that was incentive driven</td>
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<tr>
<td>Vrabic et al. (2022)&lt;sup&gt;230&lt;/sup&gt;</td>
<td>D (cross-sectional)</td>
<td>USA</td>
<td>Caregivers of children ages birth to 5 yrs. recruited from five family shelters in Philadelphia</td>
<td>Economic difficulties, family drug use, episodes of homelessness, having a father who is incarcerated</td>
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<td>Limited scope which perhaps affected the articles found</td>
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<td>Formal search strategy was not provided</td>
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</tbody>
</table>

Note: 
- ACEs: Adverse Childhood Experiences
- WIC: Women, Infants, and Children program
- USA: United States of America
<table>
<thead>
<tr>
<th>Study (Year)</th>
<th>Study Design</th>
<th>Country</th>
<th>Population</th>
<th>Prebirth to 3yrs.</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rittman et al. (2020)</td>
<td>D (longitudinal study)</td>
<td>USA</td>
<td>A population-based sample of women delivering live births in Alaska</td>
<td>Pre-birth household challenges: Multiples ACEs, Experiencing homelessness, Having an incarcerated parent, Intimate partner violence, Parental mental health, Young maternal age, Financial insecurity</td>
<td>Homelessness was an outcome of interest but it wasn’t specific to the sample. Results were not stratified by those experiencing homelessness i.e., comparison, so unable to decipher what specific ACEs those experiencing homelessness also had. Homelessness was not defined and it was maternal homelessness so it may not be reflective of the child’s experience of homelessness if they have different living arrangements, etc. Tables were poorly labelled and using different language e.g., Prebirth Household Challenge Components vs. ACEs. Did not have a representative sample. Self-reported data- recall bias. Inconsistent definitions of ACEs which may not reflect the adverse experience or challenge. Used an ACEs measure, which they expanded, but the original source wasn’t provided; no literature reference. Negative perceptions of shelter environment. Lack of statistical power to test shelter-level effects. The breakdown of individual child health measure were not reported, so results were difficult to interpret.</td>
</tr>
</tbody>
</table>
| Lucke et al. (2022)<sup>232</sup> | D (cross-sectional) | USA | • Mothers and children residing in emergency shelters | 4-6 yrs. | • Parental stress*  
• Effective parenting*  
*unable to determine real result without supplementary tables | • Important results were in six supplementary tables, which were not provided  
• No tables or graphics in the manuscript  
• Many results were not fully explained and relied on the supplementary tables  
• No descriptive characteristics of children reported except mean and range of age, and percentage of males and ethnic groups; Not age stratified  
The methods and analyses were unclear what was actually done e.g., “the child completed tasks in a separate room”  
• Homelessness characteristics were not reported e.g., duration of homelessness  
• Self-report measures subjected to bias  
• Limited statistical power |
Table 3.2 Methodological appropriateness

<table>
<thead>
<tr>
<th>Design</th>
<th>Level</th>
<th>N (Included Texts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic review or meta-analysis of randomized controlled studies</td>
<td>AA</td>
<td>0</td>
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<tr>
<td>Systematic review or meta-analysis of non-randomized controlled and/or before-after studies</td>
<td>A</td>
<td>4</td>
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<tr>
<td>Randomized controlled study</td>
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<tr>
<td>Systematic review or meta-analysis of controlled studies without a pretest or uncontrolled study with a pretest</td>
<td>B</td>
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<tr>
<td>Non-randomized controlled before-after study</td>
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<tr>
<td>Interrupted time series</td>
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<tr>
<td>Systematic review or meta-analysis of cross-sectional studies</td>
<td>C</td>
<td>6</td>
</tr>
<tr>
<td>Controlled study without a pretest or uncontrolled study with a pretest</td>
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<tr>
<td>Cross-sectional study (survey; quantitative or qualitative)</td>
<td>D</td>
<td>22</td>
</tr>
<tr>
<td>Longitudinal study without intervention</td>
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<td></td>
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<tr>
<td>Case studies, case reports, traditional literature reviews, theoretical papers</td>
<td>E</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 3.3 Definitions of Homelessness and Outcome Measures in Included Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Definition of Homelessness</th>
<th>Outcome Measure(s)/Metric(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Croft et al. (2020)</td>
<td>&quot;People in temporary accommodation are generally referred to as ‘statutory homeless’, which describes households deemed to be homeless, eligible and in ‘priority need’. Most often ‘priority need’ refers to adults with dependent children and/or households with a vulnerable member, such as someone with a disability or someone who has recently left prison.&quot;¹⁷²</td>
<td>• Homeless Link Homeless Health Needs Audit survey</td>
</tr>
<tr>
<td>Bradley et al. (2018)</td>
<td>&quot;In the UK alone, recent estimates place the number of homeless families (i.e., parents living with their children, without a legally recognised form of shelter either owned or rented by a parent) at close to 90,000 (Crisis 2015).&quot;¹⁹¹</td>
<td>• CASP qualitative assessment tool</td>
</tr>
<tr>
<td>Victor et al. (1989)</td>
<td>Temporary accommodation, bed and breakfast hotels.</td>
<td>• Inpatient admissions, admission type, admission specialty</td>
</tr>
<tr>
<td>Bassuk et al. (1990)</td>
<td>&quot;Homeless mothers are defined as those women who are pregnant or are on the streets with their children. Usually, they have 2 to 3 children, the majority of whom are 5 yrs or less. The preschoolers are growing up in shelters or on the streets during their formative years without the emotional, social, or economic resources they need for basic development.&quot;¹⁹³</td>
<td>• Demographics of children and mothers, mental health, maternal health and history</td>
</tr>
<tr>
<td>Agustin et al (1990)</td>
<td>&quot;Our streets or in city-run shelters or in welfare hotels...&quot;¹⁹⁴</td>
<td>• Housing status, health status</td>
</tr>
<tr>
<td>Riley, Johnson and Pearson (2001)</td>
<td>&quot;Shelter (1997) states that the term ‘homeless’ does not just include people sleeping rough on the streets or those without a roof over their heads, but also includes those individuals living in temporary housing, such as hostels and bed-and-breakfast accommodation.&quot;¹⁹⁵</td>
<td>• Hospital Anxiety and Depression Scale (HADS)* • Dietary Assessment</td>
</tr>
<tr>
<td>Wiecha et al. (1991)</td>
<td>Not exclusively defined- not housed.</td>
<td>• Nutritional status; nutritional related health problems; comparative health studies</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
<td>Notes</td>
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<td>-----------------------------------------------</td>
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<tr>
<td>Parsons (1991)</td>
<td>&quot;B&amp;B accommodation; 'born and bred' and was identified from the Birth Book kept by the health visitors which contains information about all children registered at the Health Centre; Firstly, the homeless are almost always by definition unemployed, particularly when placed in hotels in other boroughs.&quot;</td>
<td>Key indicators of health status: birthweight, immunisation, weight, developmental assessment and physical examination</td>
</tr>
<tr>
<td>Rafferty, Y., &amp; Shinn, M. (1991)</td>
<td>&quot;Homeless children (generally identified as those in emergency shelter facilities with their families).&quot;</td>
<td>Developmental delays, psychological problems, and educational underachievement; conditions in the lives of homeless children lead to particular adverse effects</td>
</tr>
<tr>
<td>Redlener, I., &amp; Karich, K. M. (1994)</td>
<td>&quot;Homeless child: An individual less than 21 yrs. living in the New York City homeless family shelter system. Homeless family: Households residing in the New York City homeless family shelter system. Homeless facility: A shelter or hotel utilized by the city of New York to house homeless families.&quot;</td>
<td>The Homeless Child Health Care Inventory, The available health care resources (both on- and offsite) The mechanism for advising families of available health services; perceptions of an effective referral/linkage system</td>
</tr>
<tr>
<td>Wagner, J. D., Menke, E. M., &amp; Ciccone, J. K. (1994)</td>
<td>&quot;A family was considered homeless if the members were living on the streets, in automobiles, in abandoned buildings, shelters, or missions, in &quot;cheap&quot; motels, or doubled-up temporarily with another family where the intent of stay was 45 days or less and the family had no permanent housing situation (Roth, et al., 1985).&quot;</td>
<td>The SCL-90-R (Derogatis, 1983): used to obtain data regarding the mental health status of the mother A structured interview schedule, &quot;The Homeless Children Interview Schedule- Mother’s Version,&quot; developed by Wagner and Menke (1988)</td>
</tr>
<tr>
<td>Burton, G., Blair, M., &amp; Crown, N. (1998)</td>
<td>&quot;For the purpose of this study those defined as 'officially homeless' were those families recorded on the local authority housing department register for homelessness. Those families referred to as 'unofficially homeless' were defined as those living with relatives or friends for a period of time greater than one month.&quot;</td>
<td>Data items including weight, height, vision and hearing screening tests Morbidity recorded at time of school nurse interview Immunisation uptake Accident and emergency attendances in the first five years and past and present registrations on the child protection register Parental perceptions of their experiences in homeless accommodation and of their child’s health</td>
</tr>
<tr>
<td>Kidd, S. A., &amp; Scrimenti, K. (2004)</td>
<td>&quot;U.S. Department of Education (2000) guidelines for defining child/youth homelessness. These guidelines (cited in the McKinney-Vento Homeless Assistance Act, title VII, subtitle B, sec. 725) suggest that counts of homeless children should include children who are living in shelters for runaways, on the streets, in abandoned buildings, or in other facilities unfit for human habitation; children who do not have an adequate home base (stable, with appropriate shelter and amenities) that serves as a permanent home; children in transitional emergency shelters; sick or abandoned children living in state institutions because of no other suitable alternative; runaway/throwaway children living together as a group in a suitable shelter; and children living with friends or relatives. Excluded from the count were children living in foster homes and children incarcerated for violations of the law.&quot;[^202]</td>
<td>• Demographic profiles; experiences of homelessness; service needs</td>
</tr>
<tr>
<td>Menke, E. M. (2005)</td>
<td>Not exclusively defined: &quot;It is important to understand the experiences of children who are without a place to call home, as they have little or no choice about where they live but they are free to choose the meaning of the experience in their journey through childhood.&quot;[^203]</td>
<td>• Parse’s criteria for the critique of qualitative research: children’s experiences of being without a place to call home</td>
</tr>
<tr>
<td>Grant, R. (1990)</td>
<td>Tier I (barracks type or congregate) shelters; Tier II shelters, which provide apartment-like rooms with kitchens; welfare hotels; substandard housing; doubled up with friends or family.</td>
<td>• Separation and attachment • Sleep patterns and eating patterns • Emotional status • Attention span • Gross motor development • Speech and language development • Cognitive development</td>
</tr>
<tr>
<td>Study</td>
<td>Definition/Description</td>
<td>Measurements/Assessments</td>
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<td>-------------------------------</td>
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</table>
| Sleed, M., James, J., Baradon, T., Newbery, J., & Fonagy, P. (2013) | "Hostels don’t give their own definition; The most common reasons for becoming homeless and seeking temporary accommodation include: loss of accommodation provided by relatives or friends (38%), domestic violence or broken relationships with partners (19%), and economic difficulty (6%) (Department for Communities and Local Government, 2009). These figures suggest that many families living in temporary accommodation have experienced disrupted family relationships, isolation, poverty, and violence." | • Bayley Scales of Infant Development: Infant mental and motor development  
• Interactions between the parents and infants  
• Demographic details |
| Shinn, M., Samuels, J., Fischer, S. N., Thompkins, A., & Fowler, P. J. (2015) | High-risk families entering the homeless shelter system. | • Child Behavior Checklist; Children’s Depression Inventory  
• School or Child Care Attendance  
• Child Rearing Practices Report |
| Benbow et al. (2019)           | "The definition of homelessness encompassed those residing in shelters, community, and group homes; those who were residing with family, friends, or acquaintances; those who were constantly moving between unstable living arrangements; and those living on the street (Gaetz, Donaldson, Richter, & Gulliver, 2013)." | • Mother’s health while parenting  
• Demographics, social exclusion  
• Exact measures not listed |
| Brown and Chatterjee (2018)    | No exclusive definition.                                                                                                   | • Obesity, overweight, dental caries, malnutrition, iron deficiency anaemia, nutrition, dietary patterns or habits, barriers to healthy eating |
| Buu et al. (2014)              | No definition but focused on children in the context of shelters rather than clinics, schools and communities.            | • Barriers to optimal asthma management  
• Shelter systems and policies to address asthma |
| Chatterjee et al. (2017)       | No exclusive definition, but paediatric patients getting care organisations receiving funding from the Health Resources and Services Administration’s (HRSA). | • American Academy of Pediatrics released recommendations for optimal care of children and youth experiencing homelessness  
• Assessment of whether and how health care organizations that serve homeless pediatric patients meet those recommendations |
<p>| Edwards et al. (2017)          | &quot;Residing in or had resided in the maternity shelters.&quot; | • Factors influencing breastfeeding practices among young mothers in maternity shelters |</p>
<table>
<thead>
<tr>
<th>Authors</th>
<th>Description</th>
<th>Methodologies/Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jetelina et al. (2018)</td>
<td>&quot;Homelessness (i.e. “ever lived in an emergency shelter or with other friends or family because of homelessness”); unstable housing.&quot;²¹²</td>
<td>• Children’s Health Assessment and Planning Survey</td>
</tr>
<tr>
<td>Luchenski et al. (2018)</td>
<td>&quot;Inclusion health populations e.g., people with experiences of homelessness, drug use, imprisonment, and sex work.&quot;²¹⁴</td>
<td>• Effective interventions that directly affect health (e.g., pharmacology, counselling, screening, prevention) or the wider determinants of health (e.g., housing, social support, training and education, employment, crime, and recidivism)</td>
</tr>
<tr>
<td>Murrell et al. (2000)</td>
<td>Acknowledges broad range of definitions- focuses on homeless or marginally housed women of childbearing families.</td>
<td>• The AfterCare Project- client characteristic and program evaluation data; • Housing status, mental health, child health, stress</td>
</tr>
<tr>
<td>Reilly et al. (2018)</td>
<td>Housing instability; low-income background; NYC Department of Homeless Services shelters.</td>
<td>• Demographics and Health outcomes (e.g., gestational diabetes, gestational hypertension, and anaemia during pregnancy, birthweight)</td>
</tr>
<tr>
<td>Vandentorren et al. (2016)</td>
<td>&quot;...families provided with accommodation in emergency centres, long-term rehabilitation centres, social hotels and centres for asylum seekers.&quot;²¹⁶</td>
<td>• Parent questionnaire collected demographic (age, gender, country of birth, migration and residential trajectories) and socio-economic data  • Child questionnaire collected data on the child’s respiratory health, diet, sleep patterns, physical activity, health care utilization with additional questions about school and social relationships  • Health Perceptions Questionnaire from the SIRS cohort study and health care utilization (type and locations of health services visited)  • French national perinatal surveys  • Food insecurity: US HFSSM (Household Food Security Survey Measure)  • Anaemia (1-12 yrs.): HemoCue  • Overweight (2-12 yrs.): BMI  • Obesity (2-12 yrs.): BMI  • Mental Health Problems (4-12 yrs.): Strength and Difficulties Questionnaire (SDQ)</td>
</tr>
<tr>
<td>Study</td>
<td>Description</td>
<td>Measures/Tools</td>
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</table>
| Arnaud et al. (2017)  | “...homeless families sheltered in emergency centres, long-term rehabilitation centres, social hostels and centres for asylum seekers in the Paris region.”^217 | • Self-reported mental health disorders: Dominic Interactive Developmental delay: Vineland test (Vineland Social Maturity Scale)  
 • Parental depression: World Health Organization CIDI-S Parental post-traumatic stress disorders: MINI-S  
 • Food insecurity: US Household Food Security Scale Measure (HFSSM)  
 • Anaemia (1-12 yrs.): HemoCue  
 • Overweight (2-12 yrs.): BMI  
 • Obesity (2-12 yrs.): BMI |
| Cutts et al. (2018)   | “Homelessness was defined as living in a shelter, motel, and other transitional living situations or not having a consistent place to sleep at night.”^218 | • Demographics  
 • Homeless during the infant’s lifetime: Participants were classified into two categories: (1) “consistently housed”—no history of homelessness since the infant’s birth (2) “history of homelessness”—homeless for any period of time since the infant’s birth  
 • RAND Corporation health status  
 • “Lifetime hospitalizations”  
 • Parents’ Evaluation of Developmental Status (PEDS)  
 • Maternal Health-Kemper scale  
 • U.S. Food Security Survey Module, or FSSM  
 • Foregone care|
| Bovell-Ammon et al. (2020) | “Homelessness was defined as having no steady place to sleep; needing to rely on family or friends; or sleeping in a car, motel, or emergency shelter for one or more nights in the previous year.”^219 | • Child and parent health status: National Health and Nutrition Examination Survey including BMI  
 • Parent’s self-rated health status  
 • Parental mental health: Patient Health Questionnaire—2 (PHQ-2) for depression and the Generalized Anxiety Disorder two-item (GAD-2) scale for anxiety |
<table>
<thead>
<tr>
<th>Author(s) (Year)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hatef et al. (2021)</td>
<td>“…3 housing variables as follows: the team counted patients with a homeless shelter as their personal address, those with a positive response to the homelessness question in the available EHR screening questionnaires, and patients with the International Classification of Diseases, Tenth Revision (ICD-10) code of Z590 as homeless. Patients with ICD-10 codes of Z591 and/or Z598 were counted as those with housing instability.”</td>
</tr>
<tr>
<td>Fanning (2021)</td>
<td>“Both literal and non-literal forms of homelessness, including living at family shelters, outside, with another family due to loss of housing or economic hardship (i.e., doubled-up), and at hotels/motels.” Has the same discussion on differential definition, which I published before their review.</td>
</tr>
<tr>
<td>Jenkins et al. (2023)</td>
<td>“Homeless, living in a hostel or refuge or in insecure accommodation (staying with family or friends).”</td>
</tr>
</tbody>
</table>

- **Child developmental risk:** Parents’ Evaluation of Developmental Status (PEDS)
- **Children’s health care use by service (ED visits, urgent care visits, and hospitalizations):** reported by parent and verified by EHR
- **Housing Status**
- **Demographics via publicly accessible data sources:** the US Department of Education Homeless student enrolled data and the Massachusetts Department of Education school enrolment data files
- **The Area Deprivation Index (ADI)**
- **Charlson comorbidity score**
- **Utilization of health care services via the number of face-to-face encounters**
- **Socio-demographics via the Electronic Health Record (EHR)**
- **A critical review**
- **Child health:** premature birth, birthweight, antenatal care booked late, and longer stays in hospital
- **Maternal health:** mental health diagnosis e.g., ICD-10 classification, history of admission to a psychiatric facility, prescribed medications, history of substance misuse, engagement with the
<table>
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<tr>
<th>Author(s)</th>
<th>Reference</th>
<th>Description</th>
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</table>
| Slesnick et al. (2023) | McKinney-Vento Homeless Assistance Act, 2002.                             | • Substance use: Form-90  
• Self-efficacy: Pearlin and Schooler's (1978) 7-item Mastery Scale  
• Depressive symptoms: Beck Depression Inventory II  
• Maternal history of childhood abuse: demographics questionnaire                                                                                     |
| Gennaro et al. (2021)  | “...lacking a fixed, regular, and adequate nighttime residence including living in a supervised temporary shelter, temporarily sharing the home of someone known or unknown without paying rent, staying in a motel or hotel not on vacation, and sleeping in a vehicle, abandoned building, or outdoor location such as a street, park, or campground.”²²⁵ | • A binary variable describing the child’s status with the NIS’ combined 7-vaccine series, 4:3:1:3:3:1:4 (up-to-date or not)  
• Sociodemographic characteristics, housing situation, vaccine concerns (an existing consumer mail panel survey), logistical barriers to vaccination (taken from the literature), and enrolment in government-regulated programs |
| Grattan et al. (2021)  | McKinney-Vento Homeless Assistance Act, 1987. “This legislation defined homeless persons as those lacking a fixed, regular, and adequate nighttime residence or having a nighttime residence that is a publicly or privately operated shelter, a public or private place that provides temporary residence for those intended to be institutionalized, or a public or private place not designed for use as a regular sleeping accommodation for human beings (9). Our definition also included those exiting an institution—e.g., jail or a hospital—where they resided temporarily (who were in a shelter or place not meant for human habitation immediately prior to entering that institution); those living in overcrowded or temporary residences; those who “couch surf” or live with various friends or family members because they do not have a permanent residence (10); those experiencing frequent moves (two or more in the past 60 days); those experiencing continued difficulties maintaining housing because of disability, domestic violence, or employment barriers; and those at | • Quality Assessment Tool for Observational Cohort and Cross-sectional Studies  
• Risk and resilience factors                                                                                                                   |
<table>
<thead>
<tr>
<th>Study</th>
<th>Definition</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nobari and Whaley (2021)</td>
<td>&quot;...the parent having no regular place to sleep, being homeless, and being forced to move due to lack of payment. The parent was considered to have been homeless if he or she answered ‘yes’ to whether either of the following statements occurred since the child was born: “I did not have a regular place to sleep at night (or had to move from house to house)”, and “I was homeless (or had to sleep outside, or stay in a car or a shelter).” A parent was considered to have been at risk for homelessness if he or she answered ‘yes’ to whether the following statement had occurred since the child was born: &quot;I had to move because of problems paying the rent or mortgage.&quot;</td>
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<tr>
<td>Senate et al. (2021)</td>
<td>Families who “...lived at or below the federal poverty line and were currently living in homeless shelters or housed within 30 days.”</td>
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<tr>
<td>Owens et al. (2022)</td>
<td>No formal definition. Mothers had to be residing in a temporary shelter with their children.</td>
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<tr>
<td>Vrabic et al. (2022)</td>
<td>No formal definition. Family had to be living in a shelter.</td>
<td>• &quot;14 self-report items describing sense of community within the shelter context (Vrabic,2018).&quot; modelled after Sense of Community Index II (SCI-2; Chavis et al.,2008)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Parenting stress: 12 item Parent–Child Dysfunctional Interaction subscale of the Parenting Stress Index, Fourth Edition</td>
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<tr>
<td></td>
<td></td>
<td>• Adversity: Life Events Questionnaire (LEQ; Masten et al.,1994)</td>
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<tr>
<td></td>
<td></td>
<td>• Children’s social–emotional functioning: Devereux Early Childhood Assessment (DECA: LeBuffe &amp; Naglieri,1999)</td>
</tr>
<tr>
<td>Study</td>
<td>Definition</td>
<td>Measures</td>
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<tr>
<td>Rittman et al. (2020)</td>
<td>No definition.</td>
<td>• Self-report Binary Yes/No response asking if the mother was homeless&lt;br&gt;• Self-report Binary Yes/No response to prebirth challenges&lt;br&gt;• ACEs questions but not specified which survey&lt;br&gt;• 2009–2011 Pregnancy Risk Assessment Monitoring System (PRAMS)&lt;br&gt;• 2012–2014 Childhood Understanding Behaviors Survey (CUBS)</td>
</tr>
<tr>
<td>Lucke et al. (2022)</td>
<td>No formal definition. “Families had stayed in shelter for at least 3 consecutive days to allow for acclimation.”</td>
<td>• Effective Parenting: Sarason Social Support Questionnaire – Short Form (SSQ; Sarason, Sarason, Shearin, &amp; Pierce, 1987)&lt;br&gt;• Perceived Stress: The Perceived Stress Scale (PSS; Cohen, Kamarck, &amp; Mermelstein, 1983)&lt;br&gt;• Demographics e.g. shelter location, mother’s age&lt;br&gt;• Verbal IQ (Mother) Peabody Picture Vocabulary Test, Fourth Edition (PPVT-IV; Dunn &amp; Dunn, 2007)</td>
</tr>
</tbody>
</table>
**Key Findings**

Using the concept map, the themes identified in these domains (individual and family level, community level and systems level) are illustrated in **Figure 3.2**. A key finding was that the barriers contributing to poor health outcomes in Under 5s were intricately complex, with some barriers overlapping between circles of the Venn diagram because these barriers were considered influential in more than one area (**Figure 3.2**). 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). I previously published the result of the initial scoping review in *Annals of Public Health and Research*.25

**Figure 3.2 Venn Diagram Depicting Barriers to Optimal Health for Under 5s**

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<table>
<thead>
<tr>
<th>Individual/Family-Level Barriers</th>
<th>Community-Level Barriers</th>
<th>Systems-Level Barriers</th>
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</thead>
<tbody>
<tr>
<td>FEAR</td>
<td>Lack of Social Network</td>
<td></td>
</tr>
<tr>
<td>Isolation</td>
<td>Inconsistent Phone Coverage</td>
<td></td>
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<tr>
<td>ACES</td>
<td>No Privacy</td>
<td></td>
</tr>
<tr>
<td>Family Size</td>
<td>No Safe Space to Play</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>No Childcare Available</td>
<td></td>
</tr>
<tr>
<td>Exhaustion</td>
<td>Lead Poisoning</td>
<td></td>
</tr>
<tr>
<td>Domestic Violence</td>
<td>Unhealthy Environment</td>
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<tr>
<td>Reduced parental authority</td>
<td>Shelter and Housing Conditions</td>
<td></td>
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<tr>
<td>Parental Mental Health</td>
<td>Difficulty in Maintaining Hygiene</td>
<td></td>
</tr>
<tr>
<td>Low Literacy</td>
<td>Air Pollution &amp; Second Hand Smoke</td>
<td></td>
</tr>
<tr>
<td>Feeling “Watched”</td>
<td>Lack of Access to Cooking and Storage Resources</td>
<td></td>
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<tr>
<td>Age</td>
<td>Overcrowded Housing</td>
<td></td>
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<tr>
<td>Ethnicity</td>
<td>Lack of Access to Healthy Eating Options</td>
<td></td>
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<tr>
<td>Educational challenges</td>
<td>Geographic Distribution of Resources</td>
<td></td>
</tr>
<tr>
<td>Incarcerated Parent</td>
<td>Neighbourhood and Safety</td>
<td></td>
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<tr>
<td>Unemployment</td>
<td>Lack of Access to Green Spaces</td>
<td></td>
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<tr>
<td>Gender</td>
<td></td>
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<tr>
<td>Income</td>
<td></td>
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<tr>
<td>Culture</td>
<td></td>
<td></td>
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<tr>
<td>Past Trauma</td>
<td></td>
<td></td>
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<tr>
<td>Chronic Health Issues/Disability</td>
<td></td>
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<tr>
<td>Language Differences</td>
<td></td>
<td></td>
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<tr>
<td>Number of Children</td>
<td></td>
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<tr>
<td>Family Drug Use</td>
<td></td>
<td></td>
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<tr>
<td>Shame &amp; Blame</td>
<td></td>
<td></td>
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<tr>
<td>Relationship Status</td>
<td></td>
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<tr>
<td>Feeling Powerless</td>
<td></td>
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<tr>
<td>Feeding</td>
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<tr>
<td>Inconsistent Phone Coverage</td>
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<tr>
<td>No Safe Space to Play</td>
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<tr>
<td>No Childcare Available</td>
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<tr>
<td>Lead Poisoning</td>
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<tr>
<td>Unhealthy Environment</td>
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<tr>
<td>Shelter and Housing Conditions</td>
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<tr>
<td>Difficulty in Maintaining Hygiene</td>
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<td>Air Pollution &amp; Second Hand Smoke</td>
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<td>Lack of Access to Healthy Eating Options</td>
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<td>Geographic Distribution of Resources</td>
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<tr>
<td>Neighbourhood and Safety</td>
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<tr>
<td>Lack of Access to Green Spaces</td>
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3.3.1 Individual and Family Level

At the individual and family level, described barriers ranged from biological to cultural to economic. Barriers were sectioned into common health issues found among under 5s experiencing homelessness that could also lead to poor future health outcomes and parental factors that could act as barriers to optimal health outcomes as described in the ACEs framework.35–37

Common Health Issues

In a US review, Rafferty et al. (1991) found that all of the disorders studied were more common among children experiencing homelessness, often occurring at double the rate observed in the general paediatric caseload.198 The most common disorders among children experiencing homelessness were upper respiratory infections (42% vs. 22% in the national sample [all children in the general paediatric caseload]), minor skin ailments (20% vs. 5%), ear disorders (18% vs. 12%), chronic physical disorders (15% vs. 9%), and gastrointestinal disorders (15% vs. 4%) (Rafferty et al., 1991, p. 1170).25,198 Furthermore, Grant (1990, p. 76) conducted a case study of 72 homeless families at a daycare at a New York welfare hotel (USA), which found developmental delays and deviations in three-fourths of children, especially impulsivity and speech delay.204 In the Children’s HealthWatch 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% confidence interval [CI] 1.18, 2.47; p < 0.01) and developmental risk (AOR 1.62; 95% CI 1.04, 2.53; p = 0.03).25,218 Among infants in Hackney (UK), Parsons (1991) found 25% of babies living in B&B hotels (UK) were born with a weight < 2,500 g.197 Similarly, babies born to mothers living in New York City shelters (US) 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.25,204

Common nutrition-related problems more prevalent among children experiencing homelessness included more gastrointestinal ailments (e.g., diarrhoea and asymptomatic enteric infections), dental problems, nutritional deficiencies (overweight, chronic and acute undernutrition), and lead poisoning.25,198 Riley,
Johnson and Pearson (2001) conducted a cross-sectional study in a sample of 65 residents from three council hostels providing temporary accommodation for families or individuals experiencing homelessness in the town of Hinckley in Leicestershire (UK); a dietary assessment was issued to evaluate the diet of under 5s (n=26) and adults in four key areas: fruits and vegetables, starch, dairy products, and meat and fish or alternatives. The most drastic dietary results found in under 5s were: 1) only 18% had the recommended 4 servings of fruits and vegetables per day, and 2) only 45% had the recommended 4 servings of starch (bread, cereals and potatoes) per day. In a review, Wiecha et al. (1991) found that the prevalence of anaemia in children experiencing homelessness, with the majority under the age of six years, varied among studies from 2.2% to 50%. Furthermore, in these studies, anaemia was almost twice as prevalent among children experiencing homelessness as it was among standard reference populations or housed comparison groups. In the ENFAMS Survey, a cross-sectional study of 801 families experiencing homelessness in the Paris region (France), malnutrition was a significant problem: the high prevalence of food insecurity (77% of parents and 69% of children) was measured using the US Household Food Security Scale Measure (HFSSM), overweight (38% of mothers and 22% of children) and obesity (32% of mothers and 4% of children) measured with a body mass index (BMI) scale. 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, Arnaud et al. (2017, p. 621) found anaemia was also positively associated with child food insecurity, no cooking facilities and household monthly income.

**Parental Factors**

In the literature, several parental factors were identified that were a barrier to their children achieving optimal health outcomes. These included suboptimal parenting behaviour and poor parental mental health. Furthermore, there was evidence for barriers to accessing health care that the parents experienced themselves.

In a systematic review and thematic synthesis of thirteen qualitative studies, all originating from the USA, researchers identified multiple facets of homelessness that can impede positive parenting behaviour in homeless families with children ages 0-
17 years as compounding developmental risks. From a parental standpoint, the barriers to optimal health and health services access for under 5s 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. In a cross-sectional study of 76 rural mothers and children under age thirteen years, Wagner, Menke, and Ciccone (1994) used the Symptoms Checklist-90-R and Hospital Anxiety and Depression Scale (SCL-90-R) to determine the mental health status of the mothers with a structured interview. Results showed that additional barriers faced by the mothers included threats to self-sufficiency and self-reliance as well as systematic barriers in the lack of availability, accessibility and acceptability of mental health care in rural areas. 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, in addition to practical strategies such as reading, writing in a journal and staying focused on long-term goals.

Bassuk et al. (1990) conducted a descriptive case study of 80 families and 156 children residing in 14 Massachusetts family shelters accompanied by a literature review. Of the 156 children, approximately two-thirds of the children were preschoolers, aged five years or less. Although this review did not focus exclusively on “homeless children”, they did a case analysis for this specific population. Identified socio-demographic barriers included 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. Parental 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. In addition, elements of 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. Across five US cities, compared with consistently
housed mothers, mothers with a history of homelessness had higher adjusted odds of fair or poor health and depressive symptoms. Vandentorren et al (2016) found high rates of depressive disorders in 30% of mothers experiencing homeless and 20% of children with 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). Some social barriers tended to overlap between the individual/family and community levels, including stigma, media portrayal, inconsistent phone coverage and social capital.

3.3.2 Community Level
At the community level, barriers existed within both the neighbourhood and housing environments. 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. Unhealthy and polluted neighbourhood and housing environments also acted as barriers to optimal health for children. More specifically, a case study conducted by Buu et al. (2014) found indoor and outdoor smoking was a problem, even on shelter property, which contributed to second-hand smoke and asthma triggers among children. Lack of basic amenities, privacy and difficulty maintaining hygiene were also argued as inevitable obstacles.

In the housing environment, Murrell et al. 2000 conducted a cross-sectional survey of women ages 15-40 years enrolled in the AfterCare project (US) who were pregnant or parenting an infant six months old or younger and found additional housing-related barriers. These barriers included poor quality housing, overcrowding, type of temporary or insecure housing (e.g. B&B, shared rooms) and hostile neighbours or flatmates/housemates. Studies reported participants living in temporary or insecure accommodation for extended periods of time, which exacerbated poor health and health services access. In a UK case study of five-year-olds experiencing homelessness, who were compared to non-homeless controls, 80% of those experiencing homelessness 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, which then impacted poor immunisation uptake and increased reliance on A&E services.\textsuperscript{201} In infants and schoolchildren living in TA 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, lack of sunlight, susceptibility to infections, depression and even genetic selection.\textsuperscript{197} Shared washing and cooking facilities were noted as barriers by spreading infection and encouraging an unhealthy diet.\textsuperscript{25,195} 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.

### 3.3.3 Systems Level

Systems-level barriers existed in the form of policies and access to health resources and services. Difficulty navigating the system\textsuperscript{207} was among the most common barrier 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).\textsuperscript{25,199} From an infrastructural standpoint, there were restrictive requirements to accessing services such as proof of address,\textsuperscript{214} 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, had difficulty getting what they needed during an emergency (e.g. pharmacy) as well as had a scarcity of health information, which oftentimes led to overreliance on acute care services.\textsuperscript{208,212} In addition, a common problem reported in the UK-based studies was the difficulty accessing services in their `homeless' residences because families were likely to have kept registration with their original doctor prior to moving.\textsuperscript{201} Among 6492 primary caregivers of children ages 0-17 years in Dallas, Texas (US), the Children’s Health Assessment and Planning Survey characterised unmet health care needs 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.\textsuperscript{25,212} In a cross-sectional study of 169 organizations that provided services to children funded by the US Health Resources and Services Administration’s Health Care for the Homeless Program, system-level barriers also included a lack of time, knowledge, and local/state resources, immigration status, difficulties in meeting provider recommendations and a lack of care plan integrating comprehensive and acute care.\textsuperscript{210}

Using the Homeless Child Health Care Inventory (HCHI), Redlener, I., & Karich, K. M. (1994) found that available health care resources varied considerably throughout the shelter system and that nearly 50\% of children experiencing homelessness in New York City (US) did not have access to appropriate medical care. Furthermore, the majority (53\%) of children experiencing homelessness at the time of the HCHI were under 5 years of age with a significant proportion (25\%) younger than 2 years.\textsuperscript{25,199} In a survey of 170 families primarily “couch hopping”/living temporarily with friends or family (52\%) or living in a shelter (41\%) in New Haven (US), Kidd and Scrimenti (2004) observed there were high levels of service needs in all areas, and basic need requirements not being met (food, shelter, clothing).\textsuperscript{202} Victor et al. (1989) collected additional evidence by comparing homeless families’ use of hospital services with that made by local residents of Paddington and North Kensington (UK), an area that housed homeless families from a list compiled by the Environmental Health Department of Westminster at the time.\textsuperscript{192} Children experiencing homelessness and living in hotels were significantly more likely to present with an infection (57\%) than local children (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 also less likely to be registered with a general practitioner.\textsuperscript{25,192}

In a randomised controlled trial (RCT), Shinn et al. (2016) studied 200 newly homeless families in Westchester County, NY (US) (with 311 children aged 1.5-16yrs) in which mothers had diagnosable mental illness or substance problems. The Family Critical Time Intervention (FCTI) (e.g. case management; community-based service model) was delivered to one group while the control group received usual care. FCTI differed from usual care in three ways: 1) in FCTI, families received
continuous case management from a single worker with specific training, while usual care services reassigned caseworkers during and after shelter stays; 2) FCTI case managers carried lower caseloads of 12 families evenly divided by phase of intervention in comparison to usual care where shelter caseworkers carried caseloads approximately two times greater, and County social services workers who served usual care families after they left shelter had caseloads four times as large; 3) FCTI families moved from shelters to permanent housing as soon as possible while usual care families had access to scatter-site subsidized housing only after meeting the caseworker’s standards for housing readiness.25,206 In the 1.5-5yrs age group, FCTI reduced both internalizing and externalizing behaviours; for internalizing, the greatest difference (SD= 0.6) between the FCTI and usual care groups was observed at 9 months; for externalizing, the group difference in T-scores was 6.2 (SD=0.5). There were no differences between groups in any child care or school measures: Child Behaviour Checklist; Children’s Depression Inventory; School or Child Care Attendance; Child Rearing Practices Report. The probability of children experiencing school/child care trouble increased since baseline from 0.21 at 3 months to 0.43 at 24 months in the combined intervention and control groups.206 School/child care trouble was measured differently across age groups: for children ages 1.5–5, mothers answered one dichotomous item about whether or not youth got into trouble at child care. Among both groups, absences reportedly decreased over time in this age group such that children missed 1.4 fewer days per month at 24 months than at 3 months. Mothers reported that children experienced almost no negative experiences in school, with 75% reporting mostly positive experiences across time.25,206 This study was reliant on the mother’s reporting of childhood outcomes using questionnaires without asking children about their experiences. A mixed-methods study design including qualitative exploration of experiences alongside the trial may have helped to identify broader benefits of the intervention or explain its apparent lack of impact on the outcomes measured.
3.4 Discussion

At the time of publication of the initial review findings, to my knowledge, this was the only scoping review of health outcomes and access of under 5s living in temporary or insecure accommodation in HICs. Poorer health outcomes (e.g., respiratory infections, anaemia, 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 also identified, and these were interrelated and context-specific.

Numerous barriers were found at the individual/family, community and systems levels, of which were many were interrelated between levels. The Figure 3.2 Venn Diagram shows one potential way these levels interact, but these could be interpreted and arranged in numerous ways. “No privacy” was between the individual/family level and community level as this barrier existed in both the individual/family environment as well as the housing environment; some barriers were interrelated across all three levels, namely poverty, heightened mobility and transient lifestyle. In addition, this interrelatedness appeared to have 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).

There were also examples of barriers, which were contextually-bound. Many US studies referenced a lack of insurance or comprehensive health plan as systems-level 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 NRPF status, such as refugees and asylum seekers. It was surprising that there weren’t more UK-based studies given the UK’s high rates of child homelessness and
lowest rank across UNICEF’s six child health well-being indicators as compared to other high-income OECD countries.\textsuperscript{25,126,183}

**Quality of Identified Studies**

An important finding from this review was the variable quality (e.g., limitations) of the included studies. As shown in \textbf{Tables 3.2 and 3.3}, quality appraisal identified that more methodologically rigorous research is needed to identify what barriers exist for under 5s and their families in accessing health services and how this affects the child’s and caregiver’s health. The lack of sociodemographic data in some studies limited understanding if the samples were representative and if the findings could be generalisable. Although studies measured similar health outcomes, 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. This thesis recommends that future studies adopt a standardised toolkit to measure the health and well-being of families experiencing homelessness, including children and all household members, so that the results can be compared across studies (as described in \textbf{Chapter 7}). Ideally, this toolkit would be co-developed across relevant parties and sectors. In April 2020, the Children’s Commissioner for England called for better ways of collecting “real-time data” since the pandemic lockdown had removed the usual ways of identifying at-risk children.\textsuperscript{234} 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.\textsuperscript{14,25} Standardisation will also improve the generalisability of data collected across sectors. These data are vital because they will also provide measures of inequalities and inequities. After my reviews were published in August 2020\textsuperscript{14} and February 2021,\textsuperscript{25} a \textit{very similar} review\textsuperscript{222} was published. However, the author did not use a formal systematic methodology, including when the search was conducted, where the articles were retrieved from or what clearly defined the inclusions/exclusions criteria, so important studies were missing.
Definitions of Homelessness

One of the objectives of this review was to look at how homelessness was defined across studies because currently, there is no universally accepted definition of homelessness\textsuperscript{58} (as described in \textbf{Chapter 1}), which also impacts data comparability. In this review, 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 the application of standardised definitions of homelessness and reporting of findings according to different types of homelessness (\textbf{Table 3.3}). 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.\textsuperscript{85} In most cases, U5TA were not studied as an exclusive group primarily due to inconsistent definitions of homelessness used (e.g., temporary accommodation, shelters, etc.) or lack of age-stratification, which was a gap in the literature for this specific population.\textsuperscript{24,25} The under 5s age group were also lumped together in a hotchpotch of mixed categories, e.g., shelters, transitional living arrangements, inconsistent places to sleep or a combination of these described by histories of homelessness (\textbf{Table 3.3}).\textsuperscript{24,25} Therefore, there was no way to determine whether this categorisation corresponded to the TA defined in \textbf{Chapter 1}, which may affect the generalisations of this review.

Definitions of Health Service Access

Another crucial observation was that studies did not define the term access in relation to health services or use a working definition. The definition of access to health services like homelessness is complex but relies on standardised definitions. 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.\textsuperscript{24,25}
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 accommodations because of different policies, including Section 17 of the Children, Homeless Reduction Act (2017), Housing Act (2004) and National Asylum Support Service (NASS). As the majority of studies on children experiencing homelessness 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.

3.4.1 Strengths and Limitations

Although the CATS Framework was limited, it was best suited for the broad scope and this specific sample of under 5s with 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 further limitation of this 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 systematic scoping review methodology being selected. However, the hierarchy of evidence utilised (Table 3.2) may not have been the best appraisal method to judge the quality of evidence (i.e. valid or reliable) for exploratory research questions. Cross-sectional or case studies made up the majority of included studies, but this classification system did not further distinguish quality amongst these categories. Due to the exploratory nature of this thesis, I assessed individual study strengths and limitations, including metrics and definitions of homelessness used (Tables 3.1 and 3.3) during data extraction to better inform my methodologies. With hindsight, I may have narrowed down my review research question or made it less “exploratory” in order to use a different framework and assessment method.

In the included 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. Prior to starting this thesis in Fall 2018, under 5s were rarely studied as an exclusive group \( n=5 \) or independent group from other children \( n=8 \), often mixed with older ages \(<28\) years old) and most results were not age-stratified, i.e., \(<5\)-year age groups or only looked at outcomes that under 5s would have in common with children 0 to 18 years \( n=14 \). Therefore, the impact of homelessness on the importance of the early formative years, including growth and cognitive development, impacted by homelessness became an evident gap in the literature. This review focused on primary research studies or reviews of primary research studies; however, the main limitation in most included reviews was the lack of details related to the study methodology e.g., protocol, search criteria, number of included articles (Tables 3.1 and 3.3). Therefore, it was not possible to verify what standardised research procedures/guidelines were followed e.g., PRISMA.\(^{24,25}\) Although some of these aforementioned \( n \)-values almost doubled in the updated literature search (March 2023), most included studies were still narrowly focused in the sense that they did not include multiple cross-sector perspectives and few text considered facilitators. A balanced view of barriers compared to facilitators and parental/provider perspectives is vital for a comprehensive understanding of these issues and developing policies, strategies and feasible interventions. As such, future researchers should try to incorporate these aspects into their study designs. Lastly, \(~70\%\) of included studies were US-based, which may make the results less generalisable to other HICs. This also demonstrated the need for other HICs to prioritise child homelessness in the early years on their research agendas.

### 3.4.2 Implications

The first five years of life is a critical growth and cognitive developmental period.\(^{1,2}\) Given the high prevalence of children living in TA and this evidence demonstrating that homelessness and the barriers it creates have profound and long-lasting effects on child health, U5TA need prioritisation. These childhood adversities justify its inclusion and formal recognition as one of the ACEs on the national level in England and all categories of homelessness as ACEs worldwide\(^{40}\) (Chapter 1). This review demonstrated that child homelessness in TA is an adversity experienced during childhood with lifelong consequences and, therefore, should be considered in future
ACE measures and evaluations on the local, national and global levels. Radcliff et al. (2019) also argued to expand the scope of ACEs, thereby promoting further research on the number and types of childhood adversities linked to negative health outcomes.38

Grant et al. (2013) conducted a systematic review demonstrating that the bulk of literature on the health and wellbeing of children and families experiencing homelessness was published during the 1980s and 1990s, especially in the US.25,235 Whilst the policies may still be relevant, the demographics of families experiencing homelessness have changed considerably over the past thirty to forty 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".25,235 Research is urgently needed to understand how the COVID-19 pandemic 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 under 5s and whether countries can still meet their 2030 targets for the Sustainable Development Goals.25,236–239

COVID-19 added a completely new layer of risk and possibly amplified the pre-existing barriers reported in this chapter as well as introduced new ones which are discussed in Chapters 5 and 6. U5TA “…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."13,25 In the latest search, the included articles published since 2020 have yet to capture the true pandemic burden, as most were reporting on studies conducted prior to the pandemic. That being the case, it will likely take a few years to “catch up” and publish that evidence on this population. This may or may not change the implications of this review depending on the study design and the data collected. For example, I designed my survey for the UKRI study using pre/post pandemic data and validated measures.20 This survey would have provided insight on changes in TA, health outcomes and health care access, which would be a stepping stone towards a standardised toolkit for this vulnerable population. Unfortunately, I was not
permitted access the survey data, so I can’t comment further on the exact implications. If I had to hypothesise, I believe the identified barriers found in this review would have been exacerbated due to the pandemic, which the pre/post data would have shown. These data would more likely be comparable and generalisable to other populations in England because I designed the survey with this in mind.

3.5 Chapter Summary

- Although sparse, there was evidence demonstrating a series of interacting barriers preventing under 5s from achieving optimal health outcomes and accessing health services.
- More recent evidence is needed to accurately reflect the changing socio-demographic profiles and health needs among these vulnerable populations from decade to decade. This can be used to assist with risk assessments and homelessness prevention efforts.
- Greater emphasis should be placed on data collection, including the use of validated measures, standardised definitions and health indicators measured on a more regular basis to reflect the age and growth periods of a child during the first five years of life.
- In this review, U5TA were not studied as an exclusive group, which obscured early years development from the literature. This was primarily due to inconsistent definitions of homelessness used.
- The included manuscripts included did not focus or reflect the additional potential burden of the pandemic on this population.
- To fill this evidence gap, future research should be dedicated to U5TA with a clearly defined inclusion criteria using a standardised definition of TA. Likewise, special attention should be placed on the possible impact of the pandemic on this vulnerable population during the early years of development and how this will affect generations to come.
- Furthermore, future research should draw from the barriers identified in this review to develop targeted, co-created studies, interventions and evidence-based policies with families with under 5s experiencing
homelessness. Together, these programs and policies can shape how the health and wellbeing of vulnerable under 5s and next-generation adults are measured and assessed.

- The findings from this review were used to inform methodologies of Phase 2-5 in the upcoming chapters.
Chapter 4

Phase 2. Community Study

4.1 Overview

In this chapter, I address RO2 of the PhD: To explore the potential of citizen science approaches working with U5TA and their families to identify environmental factors impacting health outcomes and health care service access. The sub-objectives were as follows:

1) To determine barriers and facilitators to optimising health outcomes and accessing health care services on the community level in both the neighbourhood and housing environments for U5TA as identified by those with lived experience.

2) To explore whether this could be done through a citizen science approach and its suitability utilising a triangulation of various mixed methods such as collaborative meetings, mobile app surveys, house visits, and transect walks by working together with current families of U5TA with lived experience in a community-based setting.\(^9\)

By the end of this chapter, I will have reported the identified barriers and facilitators and determined whether citizen science with methodological triangulation is a suitable approach to work with U5TA and their families in an LBN community setting to identify such barriers and facilitators. I conclude with discussions on the benefits and limitations of this study. The housing results of this chapter have already been published.\(^9\)

4.2 Methods

This multipart community-based, mixed-methods study utilised a citizen science approach. Methodological triangulation\(^{240–242}\) was used to design the study into three distinct components (Figure 4.1): 1) two piloted mobile app surveys of the housing
and surrounding neighbourhood environments conducted by the participants (Part I), 2) house visits and transect walk I conducted as the researcher (Part II) and 3) five collaborative meetings (CMs) with the participants and me throughout the process (Part III).

Figure 4.1 Methodological Triangulation

The mobile phone surveys were piloted, and procedures were refined before conducting the main data collection. This dual environmental approach (i.e., housing & neighbourhood) was taken because structural features of the home (i.e., mould, infestation/vermin) can directly impact health, while location (accessibility to services and facilities), neighbourhood-built environment (recreation, parks, and walkability) and social connectedness to a community can indirectly impact health as shown in Chapter 2.

By way of background to the methodology, I first discuss what is meant by citizen science and how this overlaps with participatory approaches before describing the study setting. The study setting was LBN, more specifically, participants were recruited from the Magpie Charity (see Section 4.2.1 for a detailed description of study setting). Next, I further elaborate on the researcher’s role and study design co-development, including a preliminary meeting with the population of interest, ethical considerations and participant information, followed by data collection methods and
analysis using methodological triangulation. Methodological triangulation was chosen because it used more than one kind of method to study a phenomenon,\(^9\) which in this case, was the issues that U5TA face on the community level in both the housing and neighbourhood environments,\(^{240–242}\) This helped to confirm findings, increase validity, and minimise response bias through a more comprehensive dataset. Together, this provided a richer understanding of the phenomena being studied, and offers future interested parties a balanced, holistic interpretation of these issues.\(^{240–242}\)

**What is Citizen Science? Definitions and Approaches**

“Citizen science”, a term first coined in the mid-1990s, is an emerging area of research and practice where members of the public have a greater role in research. This approach recognises that members of the public play an invaluable role in the research process, honouring the “*it takes a village approach*”\(^{245}\) and providing insights not typically held by researchers, thus bridging the gap between the community and scientists.\(^{246}\) The first principle of the *European Citizen Science Association’s (ESCA) Ten Principles* is: “Citizen science projects actively involve citizens in scientific endeavour that generates new knowledge or understanding. Citizens may act as contributors, collaborators, or as project leader and have a meaningful role in the project.”\(^{247}\) Citizen science is utilised across a wide range of scientific disciplines with different parties that apply various methodologies, theories, and practices. While each field’s interpretation and application of citizen science might be slightly different, the end goal remains the same.\(^{248}\) Although there are numerous precursors, including forms of advocacy and crowdsourcing,\(^{249,250}\) citizen science is more than just a novel term—it has evolved in its application, making it distinct from other practices. For example, the *ESCA Ten Principles* (Figure 4.2) list best practices,\(^{251}\) which guided the **Phase 2** methodology, but such practices have not been previously used by its predecessors.
Ten principles of citizen science

1. Citizen science projects actively involve citizens in scientific endeavour that generates new knowledge or understanding. Citizens may act as contributors, collaborators, or as project leader and have a meaningful role in the project.

2. Citizen science projects have a genuine science outcome. For example, answering a research question or informing conservation action, management decisions or environmental policy.

3. Both the professional scientists and the citizen scientists benefit from taking part. Benefits may include the publication of research outputs, learning opportunities, personal enjoyment, social benefits, satisfaction through contributing to scientific evidence e.g. to address local, national and international issues, and through that, the potential to influence policy.

4. Citizen scientists may, if they wish, participate in multiple stages of the scientific process. This may include developing the research question, designing the method, gathering and analysing data, and communicating the results.

5. Citizen scientists receive feedback from the project. For example, how their data are being used and what the research, policy or societal outcomes are.

6. Citizen science is considered a research approach like any other, with limitations and biases that should be considered and controlled for. However, unlike traditional research approaches, citizen science provides opportunity for greater public engagement and democratisation of science.

7. Citizen science project data and meta-data are made publicly available and where possible, results are published in an open access format. Data sharing may occur during or after the project, unless there are security or privacy concerns that prevent this.

8. Citizen scientists are acknowledged in project results and publications.

9. Citizen science programmes are evaluated for their scientific output, data quality, participant experience and wider societal or policy impact.

10. The leaders of citizen science projects take into consideration legal and ethical issues surrounding copyright, intellectual property, data sharing agreements, confidentiality, attribution, and the environmental impact of any activities.


Participatory approaches and community engagement are also founded on the basis of shared-decision making and effective information exchange to create behaviour change and tailor responses to service user needs. Citizen science is a form of community-based participatory research (CBPR), and although citizen science is often compared to participatory action research (PAR), it is quite distinct from the PAR approach. The ultimate aim of PAR is to enable action, through a reiterative reflective cycle of research and subsequent action, in order to change or improve the real-world issue that is being researched. Participating researchers usually “have a stake in the issues” being investigated, but PAR has been criticised as...
privileging those actors with a clear “stake” in an issue of research interest, potentially reinforcing existing power imbalances between researchers and participants.\textsuperscript{257} In PAR, the research focus is driven by change and the researchers’ desire for a process and outcome that is useful for them, which can inhibit more exploratory, open-ended approaches. In contrast, citizen science is primarily driven by an interest to improve a collective understanding of an issue, which may or may not lead to proposals for an improvement of the situation—and this improvement may eventually be implemented by very different actors than the actual citizen researchers.\textsuperscript{258} Citizen science is also distinct from PAR because it can explore issues of interest in an open-ended manner—this creates flexibility concerning the nature and direction of the findings because it is not restricted by the need to arrive at actionable conclusions or a strong activist interest, which could obscure alternative ways of interpreting the research problem.\textsuperscript{258} This is not to say that citizen science won’t produce useful findings—it can objectively generate new knowledge and still inform policy and practice, but in ways that may be different than originally intended while providing a platform for citizen researchers.

Rick Bonney and colleagues identified three models of citizen science projects, which they referred to as public participation in scientific research (Table 4.1),\textsuperscript{259} further distinguishing citizen science from PAR. Through these models, there are numerous types of data collection and sharing mechanisms on various digital platforms which aim to facilitate advances in the broader health of the public.\textsuperscript{260} **Phase 2** adopted a citizen science approach using the co-created model and multi-mixed methods. In this approach, the research was participatory through the inclusion of citizens and their real-world problems with me, the “scientist”, as the co-designer and facilitator, which resulted in a shared, open, and reflexive research process.\textsuperscript{9,261} However, due to the pandemic, this approach evolved into a hybrid of the co-created and collaborative models\textsuperscript{259} for reasons outside my control, which I describe in the Discussion. Likewise, the fourth and fifth principles of citizen science\textsuperscript{247} (Figure 4.2) were not fully realised as a result.
Table 4.1. Models of Citizen Science Projects

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>contributory</td>
<td>participants contribute data to scientific research and are researcher-driven</td>
</tr>
<tr>
<td>collaborative</td>
<td>scientists design the project, and members of the public are involved in refining it or analysing the data</td>
</tr>
<tr>
<td>co-created</td>
<td>scientists and the public work are encouraged to work together throughout the research process from defining the research question or asking new questions to disseminating conclusions</td>
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Reference from Bonney et al. 2009

Some citizen science studies have extended into public health, but as found in Chapter 3, there is a gap in the literature specifically for U5TA and their families, and no studies have used this approach on this demographic. Through exploring the potential of citizen science in this population, this study addresses this gap and has the potential to demonstrate whether there are greater health inequities and inequalities, which are influenced by the social determinants relating to the natural and built environment.¹²⁷

4.2.1. Study Design

In this section, I describe the study setting followed by explaining the researcher’s role and study design co-development. Lastly, I outline the ethical considerations and participant information.

Setting

Using a settings-based approach,¹³³,¹³⁴ a local charity, The Magpie Project (Magpie) was the designated field site for research activities (e.g. recruitment, meetings) for this exploratory study. Magpie was in Forest Gate, a residential district in LBN. On a voluntary basis, Magpie provided a safe and fun place for under 5s and their mothers experiencing homelessness in addition to essentials such as nappies, baby supplies, children’s clothes, travel expenses and food bank referrals. During the 2019 term times, they held free weekly walk-in sessions on Mondays and Wednesdays. They also provided the mothers and under 5s with advice and support, including Shelter Housing Advisors, Health Visitors, Children’s Centre

From June 2017-July 2018, Magpie provided support for 184 mothers, 211 under 5s, and 13 pregnant women who were classified as homeless as defined in Chapter 1. 59% of these mothers had not accessed Children’s Centres prior to attending Magpie; 77% of these mothers and their under 5s had NRPF. This vulnerable population was primarily based in LBN, but some families had been relocated by council services outside of the borough while all their care, services and education remained in LBN. Families were referred to Magpie from these support services and even more commonly by word of mouth, i.e., mothers telling other mothers where to seek help. Besides Magpie giving access to under 5s and their families in the study, the selection of this setting for this study was also beneficial because of the multi-faceted nature of homelessness and health, for which some aspects may be highly context-dependent. Thus, it was beneficial to examine the role of homelessness and the related transient aspect in a controlled environment under predefined circumstances where the population of interest accessed services routinely.

The Researcher’s Role

As a citizen science study, I, the researcher, acted as a collaborator, investigator, facilitator and advocate. In the beginning, I came to the study with an open mind and knew I wasn’t an expert on TA in England because I didn’t have lived experience in this context as a non-UK national—the U5TA and their families were the experts. Throughout the study, I motivated participants, helped troubleshoot any technical issues and was actively present to support them during this process. My role was to listen and observe—I was not there to dictate or force an intervention on the participants. My role was also to consult with experts in the field about their professional thoughts on the study. For example, I spoke with Professor Muki Haklay, Co-Director of the UCL Extreme Citizen Science (ExCiteS) Group and citizen science expert about finding a General Data Protection Regulation (GDPR) compliant mobile app to collect data. I also met with health visitors and third-sector organisations working with this population, which was helpful because it established early relationships for Phase 4: Professionals Study (Chapter 6).
Co-Design of the Study

In February 2019, I held a preliminary informal meeting with service users (n~15 citizens) of Magpie. I discussed my PhD and how I wanted to work collaboratively with them using citizen science. The main aim of this meeting and Research Priority Setting (RPS) was to involve potential participants and partners at an early stage in the research process to ensure a bottom-up approach with a study design and research question(s) that were acceptable and feasible while building mutual trust. Magpie set up the meeting to ensure that attendees were of the key demographic: mothers with U5TA. Key co-design decisions arose from this meeting, including the use of mobile smartphones for the Global Positioning System (GPS) data collection, the use of the mobile app “WhatsApp” to communicate during the study, the use of mobile phones to capture images of their neighbourhood and housing environments, and the feasibility of the house visits I would conduct (Figure 4.1). Some mothers had phones and articulated that they were comfortable using these applications, which justified collecting data and communicating this way. Although acceptability was not explicitly evaluated, there were high levels of agreement and enthusiasm among all potential participants about the multi-dimensional components of the study using citizen science to collect their own data and to have house visits to capture their points of view. They appeared empowered to use citizen science to share their stories and have someone “walk in their shoes” as I and then we began calling it, which became the title of the associated public engagement project (Chapter 2; APPENDIX, Public Engagement).

Participant socio-demographic data were originally intended to be included and obtained through Magpie client files to reduce participant burden as recommended. Unfortunately, due to events outside of my control, these data were not available. Because the socio-demographic data were not provided, I have used the pronouns “they/them” rather than “she/her” when referring to individual participants in this chapter. The study started in September 2019, as suggested by Magpie, due to the children’s summer holidays and the charity being closed during the month of August.
Ethical Considerations
Following the preliminary meeting, UCL Research Ethics Committee (REC) Approval ID Number: 15097-001 was obtained on 30th May 2019 before any formal fieldwork (Parts I-III) (i.e., participant recruitment, informed consent process, and data collection) took place (Approval Letter, APPENDIX.S4.1). All benefits and potential risks associated with the study and working with a vulnerable group were identified and submitted as part of the UCL REC application. I obtained a Disclosure and Barring Service enhanced certificate for working with vulnerable groups as advised by the UCL REC. Support and signposting were available if the participants felt that the study compromised their health or wellbeing: Magpie’s Manager and CEO, trained in trauma care and counselling, health visitors and a nursery nurse were available to the participants during the charity’s open hours.⁹

Participants and Recruitment
From September-October 2019, a small population of mothers living in TA was conveniently sampled from the charity during opening hours with specific inclusion and exclusion criteria (Table 4.2). The study was advertised during programming and workshops. Participants were already Magpie service users and were recruited through a sign-up sheet as suggested by the charity, which they helped facilitate. Each participant was provided with written information (APPENDIX.S4.2) about the study in English. Once the participant had a chance to read and understand the information and ask any questions, consent forms were introduced. If participants had any difficulties with the study materials, I read through these with them line by line to ensure that they had a clear understanding of the study objectives, their rights and what was being asked of them before they gave written or verbal consent (APPENDIX.S4.3).⁹
Table 4.2 Participant Criteria

<table>
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<th>Inclusion Criteria</th>
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<tr>
<td>• Be a client of the Magpie Project;</td>
<td></td>
</tr>
<tr>
<td>• Be in temporary or insecure accommodation (as defined by the charity Shelter) at</td>
<td></td>
</tr>
<tr>
<td>the time of Phase 2 of the study;</td>
<td></td>
</tr>
<tr>
<td>• Be staying in London in a Newham or non-Newham postcode;</td>
<td></td>
</tr>
<tr>
<td>• Pregnant and/or mother of children aged &lt; 5 years;</td>
<td></td>
</tr>
<tr>
<td>• Ability to communicate in English;</td>
<td></td>
</tr>
<tr>
<td>• Be willing to send/receive text messages;</td>
<td></td>
</tr>
<tr>
<td>• Be willing to have a house visit by the researcher</td>
<td></td>
</tr>
<tr>
<td>• Be willing to take photos on mobile phone and use Survey123; and</td>
<td></td>
</tr>
<tr>
<td>• Be &gt; 16 years of age.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Refuse or are unable to provide informed consent;</td>
<td></td>
</tr>
<tr>
<td>• Father of children aged &lt; 5 years;</td>
<td></td>
</tr>
<tr>
<td>• Have significant psychiatric comorbidity, cognitive impairment which may impair</td>
<td></td>
</tr>
<tr>
<td>ability to give informed consent (as documented in the Magpie client records);</td>
<td></td>
</tr>
<tr>
<td>• Plan to discontinue support and services at the Magpie Project within the study</td>
<td></td>
</tr>
<tr>
<td>period.</td>
<td></td>
</tr>
</tbody>
</table>

Sample Size

Because this was an exploratory study with a vulnerable group that was highly mobile in transient circumstances, the sample size was kept small: five participants in the pilot and fifteen participants in the main study. The sample size was determined by funding and the number of mobile phones I had available. In addition, there was a high probability that participants could be moved to another TA in a different London Borough OR outside of London, therefore, too far to commute OR ineligible to participate. This was a pragmatic approach, and if needed, Parts I-III (described below) could be repeated with another set of participants if this wasn’t enough data or there were any complications. Using convenience sampling, i.e., the first five of twenty mothers, who signed up and were eligible to participate, were selected for the pilot of the study tools.
4.2.2. Data Collection Methods

Part I- Mobile App Surveys

Surveys were administered using the mobile app “Survey123 for ArcGIS”\textsuperscript{267} (\textsc{Appendix.S4.4}). To mitigate the barrier of digital exclusion, each participant was loaned an identical smartphone (Huawei Y6 2019) with an ID Multi SIM card 4G and 15GB of airtime data credit with which to undertake their research for the duration of the study. Fifteen phones were funded by the London Catalyst Fund. Participants were given individual login-details and instructions that the study phones were for data collection only\textsuperscript{9} but could also use the phone for calls, emails, Google Maps and other relevant apps e.g., Transport for London.

\textit{Mobile App Housing Survey}

A \textit{Housing survey} collected data on the participants’ TA. In each survey, participants were asked to capture photos of their TA and mark the corresponding category (e.g., bathroom, stairwell, shared space, etc.) in response to the question, “What are you showing in the photo?” In addition, they were provided free text captions to describe the TA housing conditions shown in their image, highlighting those conditions participants considered to be barriers to their child’s health. Participants were also asked to provide the first letter(s) and number(s) of their postcodes, so I could determine the geographic distribution of TA and if all TA had similar problems regardless of location (\textsc{Appendix.S4.5}).\textsuperscript{9}

\textit{Mobile App Neighbourhood Survey}

A \textit{Neighbourhood survey} collected data around other key locations of importance within the community, such as health care and childcare services, public community spaces, parks, government offices, schools and educational opportunities, food banks, convenience stores, grocery stores and Magpie, which were determined from \textbf{Phase 1} and the preliminary meeting. Therefore, such locations were multi-level and transcended beyond the social determinants of health and included environmental, commercial determinants, etc. (\textsc{Appendix.S1.1.Glossary}).\textsuperscript{28} The four main data elements collected for each location were mobile phone images, GPS coordinates, a short description of each location provided by the participants, and the time travelled
to the location (e.g. start time/end time). Participants were asked to log the time when they started and ended each journey from their housing to the key location (or vice versa) to see how accessible these locations were from their provided TA housing (*APPENDIX.S4.6*). The distance travelled from the participant’s TA and selected key resource location was measured by both the walking and line distances using ArcGIS.

In addition to the surveys, reminders were sent to participants via the mobile app WhatsApp including: 1) the date and time of the next CM; 2) the end date of the study and when to return their phones; 3) to collect data; and 4) to contact the researcher if they were having any difficulties in the study (*Parts I-III*). A communal WhatsApp group was set up during the study to allow opportunities for participants to contact each other and provide any form of support, whether it was technological or social. For anonymity, participants were assigned code names “Magpie” followed by P1-20; these codes were used for survey submissions and in the WhatsApp group. For the analysis, these ids were recoded as “Participant.Survey1” to “Participant.Survey20” to keep track of the different types of data per participant (e.g., house visits, CMs).  

**Pilot and Refinement of Study Tools**

Data tools and procedures were piloted over a two-week period with five participants. The data collected were anonymised, encrypted and stored on a GDPR-compliant, secure, password-protected database (Amazon Web Services and Microsoft Azure). Data from the pilot, in combination with a CM (*Part III, Meeting 2*) with participants, drove refinements to the study procedures.  

Table 4.3 shows the specific changes made to the mobile app and surveys:
**Table 4.3 Changes and Adjustments Made to App and Surveys**

<table>
<thead>
<tr>
<th>#</th>
<th>Survey</th>
<th>Change Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neighbourhood</td>
<td>Additional categories created under key locations of importance (e.g., &quot;religious institutions&quot; and &quot;Magpie&quot; as a separate category).</td>
</tr>
<tr>
<td>2</td>
<td>Housing</td>
<td>The addition of housing-related items (e.g., ventilation, garden).</td>
</tr>
<tr>
<td>3</td>
<td>Neighbourhood</td>
<td>Clearer instructions with examples under key locations when applicable.</td>
</tr>
<tr>
<td>4</td>
<td>Neighbourhood</td>
<td>The addition of questions around cost and method of transport.</td>
</tr>
<tr>
<td>5</td>
<td>Neighbour and Housing</td>
<td>The addition of word boxes where the participant could write about their travel experience or temporary accommodation in their own words as well as provide more detail around the photo they submitted.</td>
</tr>
</tbody>
</table>

**Data Cleaning**

Due to insufficient Wi-Fi access, time or data credit before the study concluded, some participants ($n=6$) had not finished submitting survey entries. When the phones were returned, I submitted the entries “as is” on their behalf with their permission to avoid data loss. Therefore, if the start/end times were not correctly reported, these were not adjusted. The data were first cleaned. Any duplicate or missing entries were discarded after I confirmed the entries both online and in Microsoft Excel. If there were duplicate entries, the most complete entry was used, or the entries were merged for the analysis. The duplicate entries that were removed had recorded the same start/end times and/or were missing their corresponding photo.

**Part II- House Visit and Transect Walk**

**House Visits**

To complement the participant photos in the Housing survey, I took observational notes using an audio-recorder and digital photos during site visits of the participants’ TA. All data were anonymised. These qualitative data sources were used to examine the several heterogeneous types of TA and to determine whether these environments were suitable for the mothers to meet the core requirements of the HCP for their under 5s. The mothers guided me through the property, pointing out their concerns and then left me to explore on my own. Descriptive details were recorded from the photos of the participants’ accommodation (*Table 4.4*). Photographs were augmented by mothers’ stories of their living conditions from discussions had in the CMs and preliminary survey data. These details were used to
gather objective evidence of potential barriers to under 5s achieving their developmental potential. Specific barriers analysed included ease of access to the property, safety risks, infestations, mould, Infrastructural defects, poor ventilation, temperature control, space (e.g., for a baby to crawl), and more.9

**Transect Walk**

In the Neighbourhood survey, locations that received the greatest amount of participant foot traffic during data collection were identified as “hot spots”. These “hot spot” locations were used to create a transect walk, which I then walked and recorded observations (Table 4.4). This participatory methodology, which I called “walk in my shoes”, has been typically applied in rural villages for health and sanitation planning; however, it is increasingly used in urban settings where researchers record observations of characteristics, risks, and existing solutions to those risks.268 This method was meant to connect and clarify what was being submitted in the surveys and discussed in the CMs.
Table 4.4 Methods and Observational Data Collected

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Observation Data Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transect Walk</td>
<td>➢ Physical Environment-Neighbourhood ➢ Community-level Barriers and Facilitators ➢ Photographs ➢ Audio-recorded observation notes</td>
<td>• foot traffic • walkability • road condition • availability of public transport • types of stores • (e.g. supermarket, pharmacy) • interactions between pedestrians • infrastructure, etc.</td>
</tr>
<tr>
<td>House Visits</td>
<td>➢ Physical Environment-Housing ➢ Community-Level Barriers and Facilitators ➢ Photographs ➢ Audio-recorded observation notes</td>
<td>• type of temporary accommodation and housing conditions • ease of access to and within the property • safety risks • infestations/vermin • dampness/mould • structural defects • noise • temperature control, poor ventilation • space (e.g. for a baby to crawl) • the condition of the restrooms and the number of people sharing it • the size/condition of shared rooms • the location of the kitchen; private or shared • cleanliness</td>
</tr>
</tbody>
</table>

Part III- Collaborative Meetings (CMs)

There were five collaborative meetings (CMs) which obtained feedback from the participants on the use of the mobile app, raw data collected and the study process. Meetings took place alongside Parts I-II and at Magpie during opening hours at a time convenient for the participants. The 2nd, 4th, and 5th meetings were audio-recorded. CMs 1 and 3 were not recorded because the focus of these meetings was app and phone use rather than discussion. Each meeting was between 45-60 minutes (min) in length, dependent on the key activities and discussion. The meetings involved collaborative dialogue, including the refinement of study tools and discussions guiding the participants through any challenges in the study. The other
objective of these CMs was to connect the dots between Parts I-II. and better understand the data, including its strengths and limitations, which would later be triangulated in the analysis stage.9

Participants were reimbursed for travel expenses and provided with lunch and a £10 voucher for each meeting they attended. I oversaw and facilitated the CMs, which were also attended by Magpie staff when available.252 APPENDIX.S4.7 reports further details on the CM dates, agendas, and key activities. A summary of the mobile app factors discussed is in Table 4.5.264

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>the factors that affect the participants’ willingness to use the app</td>
</tr>
<tr>
<td>Functionality</td>
<td>the technical factors that affect whether the app can work and participants can use the app</td>
</tr>
<tr>
<td>Usability</td>
<td>the design factors that affect the user experience of operating and navigating the app for its intended purpose</td>
</tr>
</tbody>
</table>

4.2.2. Analysis

I conducted the data analysis with input and checks from Dr. Celine Lewis (CL) and Dr. Marcella Ucci (MU). In order to assess the suitability of citizen science as an approach, i.e., “whether this approach produced reliable data that could be used for scientific purposes,”269 I specifically looked at whether there was a concurrence among the different methods conducted by the participants versus I, researcher. Comparing volunteer data with that collected by “professionals” has been identified as an important method of evaluating citizen science projects for data quality.269 A further check was the collaborative meetings where findings were discussed among the group.9

CM recordings were transcribed using NVivo.270 Transcripts were read, noting any important themes that stood out and how often they occurred. This approach was not as formal as the qualitative approach taken in Chapter 6. These were analysed to conduct a full methodological triangulation and support the results found via the other collection methods as described below. In the CM recordings, participants
were labelled “Participant.CM1”, “Participant.CM2” and so forth, because it was not possible to determine the speaker during the CMs as there were many participants often speaking simultaneously, but if a specific participant spoke more than once and I was able to identify them—they were given the same label. Further in-depth results and analysis are reported in APPENDIX.S4.8.

Housing Environment
The agreement of outcomes was checked among all three methods. Each data set (survey, house visit, CM) was analysed separately in the first instance and then compared in the final stage during triangulation. In the housing environment, a thematic analysis was conducted to triangulate themes across these data from Parts I-III using Braun & Clarke’s six-phase framework. Data familiarisation was completed when all audio recordings were transcribed verbatim in NVivo (and hand checked in Word), photos were saved, and survey responses were downloaded from the database (Step 1). For the housing survey, the pilot and main results were analysed separately and then merged for this analysis.

Initial a priori codes were generated using examples from Kingfisher’s Unfit Housing U.K. Research Report. I also took into consideration how participants self-categorized the photos they had uploaded, which were sense-checked. Each housing survey and house visit photo was assigned a code (Step 2). These codes were collated into themes guided by the theoretical frameworks (Step 3). These were reviewed by CL and MU to ensure consistency within the themes (Step 4–5) until no new themes emerged (data saturation). I also used the Housing Health and Safety Rating System (HHSRS), which assesses 29 housing hazard categories across four main groups (A. Physiological Requirements, e.g. clean air, temperature; B. Psychological Requirements, e.g. space, security, light, noise; C. Protection against Infection, e.g. hygiene, sanitation, water supply; D. Protection against Accidents, e.g. falls, electric shock, burns) and the effect that each may have on the health and safety of the occupants of a property. HHSRS hazards and their risks were then assigned to each theme so that the themes could be compared to an established framework of environmental indicators.
Supportive quotations were pulled from the CMs when the participants and I discussed the study and various housing issues. Text taken from survey entries was recorded verbatim and not altered; these were the participants’ exact words, although the spelling was corrected; any grammatical issues were labelled with [sic]. These were used to create a word cloud of optional descriptions submitted by participants. Results were written up thematically, and agreement with the analysis was checked by the supervisory team (Step 6).

In order to triangulate the data, a two-step process was conducted: (1) whether the theme and HHSRS hazard were present; and (2) whether the same information and themes appeared across the three different collection methods and showed agreement. A positive sign (+) indicated that the theme and hazard were both present, while a negative sign (−) indicated that the theme was present, but not the hazard. A double negative sign (− −) indicated that neither the theme nor the hazard was present. NA meant that the data were not applicable or not available to identify or assess the presence of a specific hazard.

Neighbourhood Environment
For the Neighbourhood survey, the data were compiled into maps, arranged by key resources to identify potential community-level barriers and facilitators to health outcomes and health services access, such as distance, time, cost, geographic distribution, and environment. Descriptive statistics were taken for all survey entries. Due to insufficient time data collected, I could not determine the time [travel end time – travel start time] and distance travelled for the sample. As a result, I analysed the distance from housing to Magpie using ArcGIS’s mapping along possible routes, which determined an approximate walking time. Both measurements were taken in ArcGIS, and the direct line between points was measured in kilometres(km). Maps from the pilot were presented because these data were more complete than the main study and passed the cross-verification process I conducted with Google Maps as described in the Limitations (Discussion). Data from the transect walk and CMs were then compared with the survey for a full methodological triangulation in a similar fashion as described above for the Housing Environment.
4.3 Results

Map 1 is a visual map and summary of the barriers and facilitators within the Housing and Neighbourhood Environments, which were drawn out from the mixed-methods findings. I first present the findings from the triangulation of methods used to assess the housing environment: the mobile app housing survey, house visits and CMs. Second, I present the results of the Neighbourhood Environment: the mobile app neighbourhood survey, transect walk and CMs.
Map 1 - Visual Map of Barriers and Facilitators from Methodological Triangulation

Visual Map
4.3.1. Housing Environment

Mobile App Housing Survey

Over the two-week pilot study (16th Sept 2019 – 30th Sept 2019), five participants consented to participate, with three participants submitting 12 survey entries in total. The main study took place over one month (16th Oct 2019 – 13th Nov 2019). Fifteen participants consented to participate, and eleven completed the survey for a cumulative total of 48 entries. Overall, the 48 entries were reduced to 34 entries after the removal of duplicate/incomplete entries. The mean number of entries per participant was 4 (mode: 1, range: 0-12). Of the five pilot participants, four took part in the main study because the questions had been substantially revised; the fifth participant did not continue in the study because they were rehoused in TA outside of London and no longer met the inclusion criteria. One participant did not collect any data because they exceeded the 15GB data credit limit early in the study period. Due to insufficient Wi-Fi access or time before the study concluded, other participants (n=6) had not finished submitting saved survey entries and/or ran out of the 15GB airtime credit. The most frequently reported TA post codes were: E7, E13, IG3, IG5, N8, RM6, and RM9, which indicated that participants also lived in TA outside LBN due to being relocated by the local authority and the distances they travelled to access the charity’s free services.9

House Visits

Four house visits were conducted in November-December 2019. House visits had to be rescheduled several times due to conflicting appointment times (e.g., GP, housing office, social services) and two rescheduled from January 2020 for February-March 2020, which were later cancelled due to the onset of the COVID-19 pandemic. Over this period, at least two participants moved out of borough, and one participant dropped out on the first day due to being moved outside of London,9 thereby no longer meeting the inclusion criteria; the next participant on the sign-up sheet took their place as it was only the first day of the study.
Collaborative Meetings

Five CMs were held on Wednesdays (16 September 2019- 25 November 2019). After the pilot had concluded, pilot participants were asked to comment on the app accessibility, functionality and usability, layout of the survey and data collection measures (see APPENDIX.S4.8 and 9 for discussions and analysis). The participants recruited for the main study were also present and gave feedback based on print-out copies of the surveys. From this feedback, the participants and I determined what worked well and what did not, which lead to further refinement.

On a usability level, throughout each CM, participants clearly articulated the disadvantage of only being able to record one destination per survey when they wanted to record multiple stops with photos along their routes (e.g., Housing>>GP/Health Clinic >>Pharmacy). I agreed with the participants about the limited functionality, which was a limitation of the Survey 123 software as a research tool itself since only one GPS coordinate could be recorded per survey (CM Discussions,APPENDIX.S4.8). This became a continuous theme of the CMs throughout the study, for which unfortunately there wasn’t a direct solution.

During the fourth meeting, the halfway point of the main study, I discussed the surveys that were coming in, which I was able to see in real-time. In the submitted surveys, participants entered the same start and end times, so I tried to trouble-shoot any issues they had. In response, Participant CM3 said that they found it difficult to use the app while traveling and juggling other priorities with their children, so they waited until the end of the day to submit their entry:

“So any time that's why I use it at the end of my trips, because I find it difficult to like hold, you know, when I'm on the way to interpret information and I just memorize the time I left and how the time it took me. And I've kept it with two children. I'm always [occupied]. So when I get home, then I put my [entry in].” (Participant CM3)

Another participant said it was very difficult to remember to adjust the time at the end if submitting the survey later. I suggested taking a screenshot of the time and then they could enter it retrospectively, so they didn’t forget—participants responded positively to this suggestion and some utilised it for the remainder of the study. In the last meeting after the survey closed, participants were given printed copies of maps
and images to see the data they had all been collecting—this was the raw, uncleaned data. Participants commented on aspects of the data they had collected and their experiences of the study. These comments fed into the analyses for both the housing and neighbourhood environments, respectively. During the main study, participants attended an average of 2.3 CMs (mode = 3; range = 0-4).

**Thematic Analysis**

Among these methods (surveys, house visits and CMs), eight overarching themes were identified during the thematic analysis as risks to child health and development, or barriers to optimising health outcomes: (i) overcrowding and shared facilities, (ii) dampness/mould growth, (iii) poor/inadequate kitchen/toilet facilities, (iv) infestations/vermin, (v) structural problems/disrepair, (vi) unsafe electrical systems and appliances, (vii) excessively cold due to inadequate temperature regulation and (viii) unsafe surfaces that risk causing trips or falls. Each theme was matched to the corresponding HHSRS Categorical Hazard with a description of the health implications (Table 4.6). For each theme and HHSRS, results were triangulated to identify where there was agreement or disagreement across the three data collection methods (Table 4.6). The results showed significant agreement (+ sign) of findings across all three data collection methods. During the analysis, some themes appeared to overlap because there was a causal relationship found between them, for example, a structural problem or disrepair (e.g., broken windows) caused excessively cold temperatures. If there was overlap, each theme was analysed on its own and then I looked at what relationships existed. Themes needed to be analysed separately because some did not have causal relationships.
Table 4.6. Multi-methods Triangulation of Housing Environment Findings

<table>
<thead>
<tr>
<th>Thematic Category</th>
<th>HHSRS Hazard Category and Description</th>
<th>Health Effects (Taken from HHSRS)</th>
<th>House Visits</th>
<th>Participant Surveys</th>
<th>Collaborative Meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Overcrowding and Shared Facilities</strong></td>
<td>11. Crowding and space Hazards associated with lack of space for living, sleeping and normal household or family life</td>
<td>Psychological distress and mental disorders, increased risk of hygiene issues, accidents and personal space and privacy compromised. Increased risk of infection (e.g., COVID-19)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>13. Lighting Threats to physical and mental health associated with inadequate natural or artificial light, including the psychological effects associated with the view from the property through glazing</td>
<td>Depression and psychological effects due to lack of natural light. Eye strain from glare and inadequate light</td>
<td>+</td>
<td>+</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>14. Noise Threats to physical and mental health due to exposure to noise within the property or within its curtilage.</td>
<td>Psychological and physiological changes resulting from lack of sleep, poor concentration, headaches, and anxiety</td>
<td>+</td>
<td>NA</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>17. Personal hygiene, sanitation, and drainage Threats of infections and threat to mental health associated with personal hygiene, including personal and clothes washing facilities, sanitation, and drainage</td>
<td>Stomach and intestinal disease, skin infections and depression</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
## II. Dampness/mould growth

1. **Damp and mould growth**
   Health threats due to dust mites, mould or fungal including mental and social wellbeing health threats associated with damp, humid and mouldy conditions
   - Allergies, asthma, effects of toxins from mould and fungal infections

## III. Poor/inadequate kitchen/toilet facilities

16. **Food safety**
   Threats of infection from poor provision and facilities to store, prepare and cook food
   - Stomach and intestinal disease, diarrhoea, vomiting, stomach upset and dehydration

19. **Falls associated with baths**
   Falls associated with a bath, shower or similar facility
   - Physical injuries: cuts, lacerations, swellings, and bruising

## IV. Infestations/vermin

15. **Domestic hygiene, pests and refuse**
   Health hazards due to poor design, layout and construction making it hard to keep clean and hygienic, attracting pests and inadequate and unhygienic provision for storing household waste
   - Stomach and intestinal disease, infection, asthma, allergies, disease from rats and physical hazards

## V. Structural problems/disrepair

26. **Collision and entrapment**
   Risks of physical injuries from trapping body parts in architectural features such as trapping fingers in doors and windows and colliding with objects such as windows, doors and low ceilings
   - Physical injuries such as cuts and bruising to the body
<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
<th>Description</th>
<th>Physical Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VI. Unsafe electrics</strong></td>
<td>23. Electrical hazards</td>
<td>Hazards from electric shock and electricity burns</td>
<td>Electric shock and burns</td>
</tr>
<tr>
<td></td>
<td>24. Fire</td>
<td>Threats to health from exposure to uncontrolled fire and associated smoke. It includes injuries from clothing catching fire, a common injuring when trying to put a fire out</td>
<td>Burns, being overcome by smoke or death</td>
</tr>
<tr>
<td></td>
<td>25. Flames, hot surfaces and materials</td>
<td>Burns or injuries caused by contact with a hot flame or fire, hot objects and non-water-based liquids. Scalds caused by contact with hot liquids and vapours</td>
<td>Burns, scalds, permanent scarring and death</td>
</tr>
<tr>
<td><strong>VII. Excessively cold due to inadequate temperature regulation</strong></td>
<td>2. Excess cold**</td>
<td>Threats to health from cold indoor temperatures. A healthy indoor temperature is 18°C to 21°C</td>
<td>Respiratory conditions: flu, pneumonia, and bronchitis, Cardiovascular conditions: heart attacks and strokes</td>
</tr>
</tbody>
</table>
### VIII. Unsafe surfaces that risk causing trips or falls

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>20. Falls on the level surfaces</strong></td>
<td>Falls on any level surface such as floor, yards and paths, including falls associated with trip steps, thresholds or ramps where the change in level is less than 300mm</td>
<td>Physical injuries: bruising, fractures, head, brain and spinal injuries</td>
<td>+</td>
</tr>
<tr>
<td><strong>21. Falls associated with stairs and steps</strong></td>
<td>Falls associated with stairs and ramps where the change in level is greater than 300mm. It includes internal stairs or ramps within a property, external steps or ramps associated with the property, access to the property and to shared facilities or means of escape from fire and falls over stairs, ramp or step guarding</td>
<td>Physical injuries: bruising, fractures, head, brain and spinal injuries</td>
<td>+</td>
</tr>
<tr>
<td><strong>22. Falls between levels</strong></td>
<td>Falls from one level to another, inside or outside a dwelling where the difference is more than 300mm. Including falls from balconies, landings or out of windows</td>
<td>Physical Injuries</td>
<td>+</td>
</tr>
<tr>
<td><strong>28. Ergonomics</strong></td>
<td>Threats of physical strain associated with functional space and other features at the dwelling</td>
<td>Strain and sprain injuries</td>
<td>+</td>
</tr>
</tbody>
</table>

Note: NA stood for either Not Applicable or Not Available. For example, there was no data applicable in participant surveys for the thematic category overcrowding under Hazard 14 (Noise) because there wasn’t a way to assess noise from the survey photos, nor did the participants report it in the textbox. A positive sign (+) indicated that the theme and hazard were present, while a negative sign (-) showed that the theme was present, but not the hazard.
**Note: This is based on the participants and my reporting and observations of large cracks in the walls and foundation, in addition to significant moisture damage. Exact measurements for temperature, moisture and the degree of structural damage were not collected. The following HHSRS categories were not reported due to the absence of monitoring equipment:**

<table>
<thead>
<tr>
<th>HHSRS Category Hazard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Asbestos and MMF</td>
<td>Exposure to asbestos fibres and Manufactured Mineral Fibres (MMF)</td>
</tr>
<tr>
<td>5. Biocides</td>
<td>Threats to health from chemicals used to treat timber and mould growth</td>
</tr>
<tr>
<td>6. Carbon Monoxide and fuel combustion products</td>
<td>Excess levels of carbon monoxide, nitrogen dioxide, sulphur dioxide and smoke</td>
</tr>
<tr>
<td>7. Lead</td>
<td>Threats to health from lead ingestion from paint, water pipes, soil and fumes from leaded petrol</td>
</tr>
<tr>
<td>8. Radiation</td>
<td>Health threats from radon gas and its daughters, primarily airborne but also radon dissolved in water</td>
</tr>
<tr>
<td>9. Uncombusted fuel gas</td>
<td>Threat from fuel gas escaping into the atmosphere within a property</td>
</tr>
<tr>
<td>10. Volatile organic compounds</td>
<td>Threat to health from a diverse group of organic chemicals including formaldehyde that are gaseous at room temperature and can be found in a wide variety of materials in the home</td>
</tr>
<tr>
<td>18. Water supply</td>
<td>Threats to health from contamination by bacteria, parasites, viruses and chemical pollutants due to the quality of water supply for drinking household use such as cooking, washing and sanitation</td>
</tr>
</tbody>
</table>
I. Overcrowding and Shared Facilities

Overcrowding and sharing facilities with different households (not family) were consistent and prevalent issues among most participants’ TA and across all three data-collection methods. I defined overcrowding as a lack of adequate space for U5TA to play and explore and applied the OECD definition for “Housing Overcrowding” (e.g., the number of family members sharing a room). One cause of overcrowding reported by participants was that flats were shared with housemates who were not family. This was corroborated during the CMs, where participants discussed the difficulties of living with other people as highlighted by comments that they were “not good housemates” [speakers unknown] and that “Everyone has housemates. That’s why it’s temporary/shared accommodation. Everyone is going to have a housemate and share with at least one other family.” (Participant.CM7) These comments were confirmed during house visits, where overcrowding was clearly occurring.

Personal hygiene was another factor associated with overcrowding which was identified. Participant CM7 described the everyday challenges of living in a shared house with many families, especially school-aged children. In this particular example, fifteen people were living together in the shared house: four families with “10 school children and only two toilets…”. This mother described what it was like in the morning when everyone was trying to get access to the toilet: “There is rush to the toilet in the morning…it’s like a race against the other people because I’m living downstairs, there’s no toilet.” For this participant, the rush was also heightened because of the need to get their children ready and out of the house in time for school. In a different TA, I visited a shared house of five families with two toilets and only one shower/tub; each family was assigned one of the five bedrooms, thereby creating an issue of personal hygiene and no room for the children to move freely in the bedrooms. Another participant (Participant.Survey17) expressed their upset through their Housing survey about sharing a bathroom at a B&B where the toilet was often left in an unclean state: “Just got in now and saw the mess that was made by the other housemates of the B&B.” Other issues associated with overcrowding included doing laundry. In surveys and CMs, participants in shared houses with one washing machine articulated the discomfort and challenges of waiting five-plus days
to do their laundry especially with one or more under 5s who use up their clean clothing and/or bibs very quickly during the week.

In the surveys, six of the eleven participants, who submitted entries, said they experienced some sort of overcrowding and difficulties sharing facilities. Overcrowding and lack of space was an issue in two of the four houses visited, which meant there was no safe space for a baby to crawl, play or explore. This finding was supported by a comment in the Housing survey where the participant wrote: “That’s the space for my baby to crawl (Image 1; Participant.Survey15).” During the CMs, this participant also spoke of how their baby spent most of its time in a buggy, also confirmed by other participants in the CMs as a common problem, which can critically hamper motor development and meeting HCP milestones. The lack of space and sometimes confinement to a single room also drew attention to another critical issue, notably the lack of natural sunlight in TA, which is a risk factor for vitamin D deficiency. As evidenced in Image 2 (Participant.Survey2), littering was an issue within and surrounding the property and shared spaces.

### II. Dampness/Mould Growth

Dampness and/or mould growth was a prominent theme and serious HHSRS category hazard found in TA across all data-collection methods.
Participant.Survey10 wrote “Mould everywhere” to describe mould growth on their walls (Image 3). This was not an isolated incident; most survey participants (six out of eleven) wrote and photographed mould growth and dampness in their TA (Images 3-6, Surveys) and linked it to difficulties with their own or their children’s asthma during the CMs. Furthermore, participants reported mould growth in bathrooms as well as bedrooms on their curtains (Image 4, Participant.Survey10). Mould and dampness were identified in three out of four house visits.

Participant.Survey16 took Image 5, which I also photographed during the house visit, demonstrating the issue was widespread across the entire entryway and façade of the building. Participant.Survey11 reported dampness that appeared to cover an entire wall, which was corroborated during the house visit (Image 6). Mould and dampness were identified in three out of four house visits. Other participants reported mould growth and/or dampness in the CMs, including one participant who had not reported it in the survey because "I don't want to show photos of my house because it's not a good place... There is mould I wouldn’t want you to see that." (Participant.CM6)
III. Poor/Inadequate Kitchen/Toilet Facilities

Poor and/or inadequate kitchen and/or toilet facilities were a consistent theme throughout participants’ entries. The most common word that came up in the textbox submission during the Housing surveys was “broken” ($n=10$) [this doesn’t include phrases “not working”]. After “broken,” the most frequently used words were “window”, “room”, “washing”, “buggy”, “damp”, “bugs” and “stairs.” (Figure 4.3)\(^9\) In one shared house, the participant reported a broken oven, broken refrigerator, broken washer/dryer, and broken kitchen cabinets (Images 7-8, Participant.Survey1). I confirmed this during the house visit where the state of these major appliances was not in good working order. Across all methods of data collection, washing machines were reported as either broken or missing, which meant that the laundry had to be done in the shower or bathtub. Image 9 (House Visit) depicted a kitchen sink which wasn’t working properly as well as water damage; the participant had to use the toilet sink for washing hands or dishes (see Section V).\(^9\) In a house visit, a different participant had no working washing/dryer or refrigerator; they eventually got tired of waiting because they needed a refrigerator to store baby food and formula, so one night, they found a refrigerator in the street.
rubbish, and they carried it up the steep, dangerous stairs back to their TA on their own (Section VIII).

**Figure 4.3. Word Cloud of Optional Accommodation Descriptions.**

Note: Larger font equated to greater frequency of word use.

![Image 7 - "Broken fridge" - Participant.Survey1](image7)

![Image 8 - "Broken oven" - Participant.Survey1](image8)

![Image 9 - House Visit](image9)

**IV. Infestations/Vermin**

"Infestation control" was widely reported by participants as a common issue in TA. Participant.Survey11 showed a cockroach infestation (Image 10). This survey response was supported during the house visit, where I saw cockroaches throughout
the TA. The tenants had clearly tried to address this problem by storing all their food in air-tight, sealed containers and by keeping the house tidy. During the last CM, when I asked participants about what types of questions should be asked in the upcoming Families Study (Phase 3 of the PhD), they specifically mentioned “infestation control” and how there was a need to address how often the mattresses were changed in TA.

Bed bugs were also a major concern. In Image 11 from the survey, Participant.Survey13 discussed having an infestation of bed bugs in their TA: “There is a bug in the room and bit me and my baby. I changed the room to another room but the problem still all the house has bugs.” Similarly, in the CMs, Participant.CM7 mentioned the frequency with which mattresses were changed in TA, clearly highlighting that this was a significant issue since multiple occupiers were using the same mattress each time a new resident living in TA moved (i.e., four-to-six weeks vs. three years), and how there was a need to address how often the mattresses were changed in TA. Multiple occupiers using the same mattress for various lengths of time is an increased risk for bed bug infestation—a single source can start an outbreak within a housing complex. In addition to psychological trauma, bed bug exposure in large quantities can result in anaemia and can trigger asthmatic reactions—all of these variables are extremely serious in under 5s and can impact both short- and long-term growth and development.


V. Structural Problems and/or Disrepair

Most TA had structural defects or damage which could be potentially unsafe and unhealthy indoor living environments. In Image 12 (Participant.Survey1), the participant reported the floorboard coming up next to the one shower/bath being shared by five families. During the house visit, Images 13a and 13b (House Visit) were taken, and I clarified the extent of this issue as a tripping hazard increasing the risk for serious physical injuries, but also for water to seep underneath the floor and produce further mould exposure, which could be seen on the ceiling ventilation fan. This house was in disrepair from every corner and had each one of the HHSRS environmental hazards listed in Table 4.6. In the same TA, the extent of a large reported “Cracked wall” (Participant.Survey1) that extended from the floor to ceiling on the top floor (Image 14, House Visit) was observed, which appeared to be water damage coming from the roof. This made the participant feel distressed about the crack as a structural issue that was of risk of becoming worse with time and/or the disrepair being neglected. In a different participant house visit, a mother and son (~2 years old) lived in a studio located in a hidden alley way next to a garage in Newham; the toilet facility had cracks in the walls and missing floor tiles (Image 15, House Visit). The participant also commented that they had difficulty with washing their child in that shower with the small opening.

In almost every survey, participants reported a broken window which was being kept closed with cellophane/duct tape: “I have a broken glass window in the toilet as well the aluminium [sic], the window stays open I cannot shut it (Images 16, Participant.Survey10).” As a result of the broken windows, TAs were excessively cold and some even made worse by a broken boiler (Image 17, Participant.Survey10; Section VII).
VI. Unsafe electrical systems and appliances

Unsafe electrical systems and appliances were a prominent finding across the data-collection methods. Multiple TA sites documented exposed electrical outlets (Image 17, House Visit) or wires coming out of the walls where there may have been a fire (Image 18, Participant.Survey1). Overall, many TAs were not suitable to under 5s and were not childproofed. For example, during one house visit, a participant reported that when they took a shower, they needed to put their son in the highchair to protect him from the numerous environmental hazards including easy access to electrics e.g., the stove knobs at standing level for the child (Image 19, House Visit). The kitchen was also wide open in this studio space and not childproofed, therefore was a constant risk that the child could turn the stove on, which could lead to the child burning themselves or causing a fire.
VII. Excessively Cold Due to Inadequate Temperature Regulation

Many participants reported broken windows and/or boilers causing excessively cold temperatures, a serious HHSRS, which could be detrimental to child health. Participant.Survey10, a mother of two U5TA, told me during my weekly visits to Magpie that they had been trying to get the local authority to repair their broken boiler for more than a month (Image 20). They also described the window above their son’s bed: “Window is broken and the rooms are very cold because of this” (Image 21, Participant.Survey10). A recurring theme across all forms of data collection was the need to use cellophane tape to patch up windows (Images 21-22) and false doors, which were possibly former windows or fire escapes (Image 23, House Visit) to keep the cold air from coming in. This was further corroborated during the house visit (Image 22, House Visit) and the indoor temperature was comparable to the outdoor temperature of 5/6°C that day. This was likely caused by the broken windows and lack of heating. For example, I observed tape sitting on a suitcase in front of the window which the participant used to replenish the tape on the windows due to moisture and even did so during the visit. According to the HHSRS, a healthy indoor temperature is 18-21 degrees(°) Celsius. The participant informed me that their son had sickle cell disease and feared that this environment only made him more ill. Three out of eleven participants, who completed the surveys, reported these issues; when they did not report it, they discussed it in the CMs. Thus, more than fifty percent of participants were experiencing these problems.
VIII. Unsafe Surfaces That Risk Causing Trips or Falls

Unsafe surfaces with changes in level greater than 300mm risked causing trips or falls. There was agreement across the data-collection methods that TA housing had dangerous staircases leading to the property, within the property or both (Images 24-29). Seven out of eleven participants in the surveys reported these issues. In Image 24, Participant.Survey15 described: “That is the staircase leading to my apartment. It is very strenuous to go on this staircase into my apartment especially carrying my baby. One day, I nearly fell on the stairs with my baby.”

"Broken boiler. The boiler is not working.”
Participant.Survey10.

"Participant.Survey10."

"Participant.Survey10."

"Participant.Survey10."

"House Visit (above)."
Participant.Survey16 reported that the “Iron was slippery” in reference to the stairs leading to the property. During Participant.Survey16’s house visit, I also photographed the stairs (Image 25a,b, House Visit) and climbed the stairs. The stairs were very steep, damp and appeared to be fire escapes. This could be particularly dangerous for a mother carrying their toddler plus buggy in the rain (Images 25a,b, House Visit). Based on the survey entries, I recognised one of the next-door buildings was the aforementioned TA (Image 24) from a different participant and that the series of houses with dangerous stairs were being used for TA (Image 26, House Visit).

Inside TA properties, the stairs were very steep, and no safety provisions were in place (e.g., child gate), nor accessible in the case that a child had a disability (Images 27-28, Housing Surveys; Image 29, House Visit). Different participants reported the difficulties and inconvenience of these stairs with the buggy, especially since there was nowhere on the ground floor to park it: “The stairs is not convenient for buggy, whenever we are going out we have take buggy down first, especially when we go for shopping, is really difficult [sic] (Image 28, Participant.Survey10);” and “The stairs are inside the property and it is very dangerous for kids [sic] and I have to take the buggy upstairs every time.” (Image 27, Participant.Survey12).
4.3.2. Neighbourhood Environment

Mobile App Neighbourhood Survey

In the pilot, all five participants completed the survey for a total of 182 entries (range 23-61 per participant). In the main study, fourteen of fifteen participants completed the survey giving a cumulative total of 257 entries, which was reduced to 246 entries after the removal of duplicates. The mean number of entries per participant was 18 (mode 8, range 3-66 per participant). A selection of the participants’ photos is below, and additional examples of resources accessed are in APPENDIX.S4.10.

Transect Walk

According to the survey data collected, one determined “hotspot” was Forest Lane in Newham which connected Magpie to the Maryland TfL Rail train station, which determined the route of the transect walk that took place on 15th November 2019 starting at Magpie on Magpie Close.

Thematic Analysis

After I familiarised myself with the data collected, data were categorised into three overarching themes with six subthemes (italicised, Table 4.7). I derived these themes from the methods and observational data described in Table 4.4. There was
a high level of concurrence across each theme when triangulating the data from the transect walk, participant surveys and CMs (Table 4.7). The subthemes of each theme are combined under each heading where it made sense, e.g., distance and time.

Table 4.7. Triangulation of Neighbourhood Environment

<table>
<thead>
<tr>
<th>Thematic Category</th>
<th>Transect Walk</th>
<th>Participant Surveys</th>
<th>Collaborative Meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Most frequently accessed services and most visited</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>II. Transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cost and Method of Transport</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>• Availability of Public Transport</td>
<td>+</td>
<td>NA</td>
<td>+</td>
</tr>
<tr>
<td>• Walkability/Road Condition</td>
<td>+</td>
<td>NA</td>
<td>+</td>
</tr>
<tr>
<td>• Infrastructure/Neighbouring area</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>III. Distance and Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Distance</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>• Time</td>
<td>+</td>
<td>NA</td>
<td>+</td>
</tr>
</tbody>
</table>

Note: NA stands for not available. The subthemes of each theme are combined under each heading.

I. Most Frequently Accessed Services and Most Visited Locations
In the main study, Magpie was the most frequently visited key location/resource (49 entries) followed by Housing (40), Children’s Centre/Early Years Services (26), and Other (35) (Table 4.8; Images 30-32).
<table>
<thead>
<tr>
<th>Destination</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magpie Project</td>
<td>49</td>
<td>19.9</td>
</tr>
<tr>
<td>Housing</td>
<td>40</td>
<td>16.3</td>
</tr>
<tr>
<td>Other - please describe below</td>
<td>35</td>
<td>14.2</td>
</tr>
<tr>
<td>Supermarket</td>
<td>27</td>
<td>11</td>
</tr>
<tr>
<td>Children's Centre/ Early Years</td>
<td>26</td>
<td>10.6</td>
</tr>
<tr>
<td>Public Space/Park/Playground</td>
<td>19</td>
<td>7.7</td>
</tr>
<tr>
<td>GP/Health Clinic</td>
<td>17</td>
<td>6.9</td>
</tr>
<tr>
<td>Religious Institution</td>
<td>10</td>
<td>4.1</td>
</tr>
<tr>
<td>Community Centre</td>
<td>9</td>
<td>3.7</td>
</tr>
<tr>
<td>Food Bank</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>4</td>
<td>1.63</td>
</tr>
<tr>
<td>Dentist</td>
<td>4</td>
<td>1.6</td>
</tr>
<tr>
<td>Hospital</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>246</td>
<td>100.0</td>
</tr>
</tbody>
</table>
For some of the key resources, such as a health resource or Magpie, I was able to cross-check the health resources accessed by Pilot participants: GP/Health Clinic(Image 33), Pharmacy(Image 34), Dentist(Image 35), Food Bank(Image 36), and Hospital(Image 37), respectively(Maps 2-6). For example, the two hospitals accessed by participants were Newham University Hospital and Royal London Hospital.
Image 33. GP/Health Clinic.

Image 34. Pharmacy.

Image 35. Dentist.

During the CMs, participants were given prompts\textsuperscript{281,282} from the surveys intended for the original \textbf{Phase 3} (pre-COVID modifications). They noted the barriers to accessing health services, including impatient and dismissive GPs; health literacy and a lack of health materials in simple English; delays in receiving immunisations; low confidence; and not having a platform to ask questions and engage in knowledge exchange (\textbf{Table 4.9}). These discussions fed into the Professionals Study informing the interview the topic guide (\textbf{Chapter 6}) and final recommendations (\textbf{Chapter 7}).
### Table 4.9. Barriers to Health Services Access - Discussions from CMs

<table>
<thead>
<tr>
<th>Barrier Themes</th>
<th>Speaker ID</th>
<th>CM Quotation on Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Impatient doctors</td>
<td>Participant.CM9</td>
<td>• “You are fine” [in reference to doctors dismissing them and not really listening to them].                                                                                                               • “…they make you feel like you are wasting their time” [in reference to why did they come in the first place].</td>
</tr>
<tr>
<td>• Intimidating doctors</td>
<td></td>
<td>• “And when you’ve waited bad things to happen, they say you never come to the doctor [because they told them not to come or nothing was wrong] because when I went to get help, you get my God.” [in reference to if they didn’t come in and if something bad happened later, the doctor would call them negligent for not coming in sooner.]</td>
</tr>
<tr>
<td>• Marginalisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Being judged on their parenting, appearance, ancestry, or accent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Not knowing what to expect from one visit to the next</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Worrying that doctors and nurses will not do what is right for their child.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Feeling like doctors are trying to give as little service as possible</td>
<td>Participant.CM10</td>
<td>• “I think when it comes to immunisations, they think we should know better. But not everybody will be focused and ask questions, but if they give us a platform, will be confident enough to be able to ask questions like for me, you got to make you feel whether it was a GP that made you feel like you have limited time and don’t have time to talk.”</td>
</tr>
<tr>
<td>• Not getting the doctor to listen to them</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Not getting their questions answered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Doctors rushing them and their child through the visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Skills and pragmatics</td>
<td>Participant.CM9</td>
<td>• “…Actually, I’m sorry, but that can take your confidence away. Yeah. I want my son. For his immunisation. Yeah. Well, I think it was can I get the flyer or leaflet something certificate. So that because of course, I can read especially while I wait. Oh yes, I know. That's 90%. You know, I would say a huge percentage of mums don’t even know what the immunisations is. Yes. This means more explanation. My view on this. In simple English with anyone looking all the way up outside. This is what Hepatitis B is, Hepatitis C.” -Participant.CM9</td>
</tr>
<tr>
<td>• Language barriers and the need to be health literate; lack of materials in other languages or in plain simple English</td>
<td></td>
<td>• “Would be good for me. Yeah. Yeah.” (In agreement) - All participants</td>
</tr>
<tr>
<td>• Not knowing what each of their child's immunizations are for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Not having enough information about how the health care system works</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Participants were given prompts from the Barriers to Care Questionnaire and Parent Patient Activation Measure (Hibbard et al. 2005), which were adapted as themes in this table.*
Map 2 - Pilot Study- Neighbourhood Survey- GP/Health Clinic

Description: Red dots with yellow circles represent the submitted GPS coordinates by the participants. The blue markers are the cross-checked addresses of the destinations based on images submitted.

Map 3 - Pilot Study- Neighbourhood Survey- Pharmacy
Map 4- Pilot Study- Neighbourhood Survey- Dentist

Map 5- Pilot Study- Neighbourhood Survey- Food Bank

Map 6- Pilot Study- Neighbourhood Survey- Hospital

Description: Participants accessed two hospitals: Newham University Hospital and Royal London Hospital
II. Transport

Through the CM discussions, the participants and I agreed that the cost and method of transport should be added as survey questions. An optional textbox was added to the method of transport question for the participants to write in more detail about the commute e.g., whether they took two buses, had to wait for five buses because of their buggy and the bus was full, or cost was a barrier to transport. The most entered word was “buggy” followed by “walk”, “bus”, “2” (i.e. indicating the number of buses or trains taken) in the optional word text description as seen in Figure 4.4. During the CMs, the participants collectively reported the availability of public transport as an issue and the difficulties of waiting for several buses in the cold because each bus was full and the space for buggy/pram was occupied. Many felt that Transport for London (TfL) could be doing more to allow mothers to commute in an efficient manner. This was consistent with the transect walk: the first marker along the walk was the Magpie Close bus stop; in the entire thirteen-minute duration of the walk, there were no buses that passed by.

The average cost of transport per commute was £1.69 (range £0-5). Bus (65.85%) and walking (43.50%) were the most common methods of transport. It was important to note that the mothers received a travel reimbursement of £3 each time they attended Magpie. This allowance may partly explain why Magpie was the most attended destination as the financial barrier was alleviated. In other words, Magpie acted as a facilitator to accessing transportation, which was confirmed during the CMs. No transportation costs were incurred during the transect walk, but the travel to my own housing was £1.60, which was comparable to the participants.

The surveys did not clearly capture the road conditions or walkability, but these variables were observed during the transect walk and were consistent with the CM discussions. In the transect walk, the sidewalk was narrow especially at the bus stop, and allowed for one person to walk at a time. The pavement was relatively flat but was uneven with many patchy spots of concrete and gravel filled in, which could easily trip a pedestrian and/or participant pushing their buggy (Image 30, Transect Walk). Closer to the rail station, there was a large roundabout under construction, which was separated into two pedestrian routes; neither route could fit a pram/buggy.
or even a large person (Image 31, Transect Walk); I had to squeeze past the metal fencing and a FM CONWAY ltd. cargo van to get through to the crosswalk to get to the Maryland Rail train station. There was no sense of the neighbouring area and infrastructure being family-friendly or walkable, especially if commuting with small children. The local infrastructure of the neighbourhood environment was captured among all data-collection methods.

**Figure 4.4 Word Cloud of Optional Travel Descriptions (the size of each word is proportionate to the number of entries using that word)**
III. Distance and Time
In ArcGIS, I mapped the route from the participants’ housing to Magpie as the focal point, since all participants had this resource in common and accessed the services weekly. In Map 7, the green pins represented the locations of the participants’ TA and at the centre, the bright blue dot represented Magpie. The direct line distance ranged 1.24 to 10.4 kilometres, which showed the distance they travelled to access the free services at Magpie such as a meal, canned goods, nappies and space for their children to play within a community of other parents in similar circumstances. The transect walk started at 12:52pm and ended at the Maryland, TfL Rail train station at 1:05pm (13min, 0.81km later) as I travelled to my housing. The direct line distance from Magpie to my housing in East London was 5.95 km, which was in the same range as the participants. I measured this distance in my Researcher’s role, although I know this was not comparable to their experience.

The shortest possible walking routes were also mapped out by the software by distance and time from the participants’ housing to Magpie (Map 8); these were not
based on start/end times submitted by the participants. The mean walking distance along roads was 5.76km (SD 4.34). The mean walking time was 69.07min, and the average speed was 0.08km/min. Some routes overlapped, which explained why there weren’t the same number of endpoints (Housing) on the map as there were participants.

Only one participant (Participant.Survey1) accessed all key resources of interest facilitating mapping for their destinations: GP/Health Clinic, Dentist, Pharmacy, Hospital, and Food Bank (Map 9). For the corresponding images, the following distances travelled (km) from their TA were calculated: 1 GP/Health Clinic (0.51km), 1 Dentist (3.33km), 2 Pharmacy (0.50km and 0.68km), 1 Hospital (7.00km), 2 Food Bank (3.61km and 3.61km) and Magpie (1.34km). As seen in Map 9, they accessed resources both in and out of LBN.

Map 7 - Direct Line Distance (km) from Housing to Magpie
Map 8- Distance (km) by Walking from Housing to Magpie

Description: This map depicted the shortest walking routes, which were mapped out by the software by distance and time from the participants' housing to the Magpie Project (Bright Blue Node in the Centre). These calculations were estimated by ArcGIS based on their maps and possible walking routes.
Description: A participant’s access of resources, and the distances in kilometres (km) from their TA: 1 GP/Health Clinic (0.51km), 1 Dentist (3.33km), 2 Pharmacy (0.50km and 0.68km), 1 Hospital (7.00km), 2 Food Bank (3.61km and 3.61km) and Magpie (1.34km). These measurements were taken in ArcGIS and were direct line measures in km from point to point.
4.4 Discussion
This was the first citizen science study that I am aware of to explore environmental barriers with mothers of U5TA. This study supported the PhD hypothesis that U5TA experience great health inequities and inequalities, which are influenced by social, economic and political determinants relating to the built and natural environments and health care service access. To recap, the primary sub-objective of Phase 2 was to identify barriers and facilitators on the community level in both the neighbourhood and housing environments for U5TA as identified by those with lived experience.

In the Neighbourhood Environment, there were both barriers and facilitators to optimising health outcomes, including most frequently accessed or visited services, transport (i.e., cost, method, availability, infrastructure), distance and time. (Map 1) In the Housing Environment, the most commonly reported barriers were dampness/mould growth, overcrowding and shared facilities, and unsafe stairs. Participants did not report any facilitators in housing, and barriers occurred in clusters and compounded each other (e.g., broken window, broken boiler, structural disrepair), giving rise to a variety of problems and sometimes subsequently making each one worse (e.g., excess cold, hazards from a window not being able to be shut, broken glass, mould/dampness). Although some of these inequalities and inequities were known to exist in unfit housing before, they had yet to be studied directly using a citizen science approach and with this marginalised group.  

4.4.1. Benefits and Ethical Challenges of Citizen Science
The second sub-objective of this community-based study was to explore the potential and suitability of a citizen science approach to address the primary aim. As hypothesised, citizen science worked as an approach to identify barriers and facilitators on the community level in housing and neighbourhood environments through a triangulation of various methodologies such as the CMs, mobile app surveys, house visits and a transect walk. All three types of data were complementary and provided a fuller picture of the thesis aims and RO2 using
different methods and observers: 1) the researcher; 2) the participants; 3) the participants and researcher working collaboratively. More specifically, the housing survey (participants) was further explored by the house visits (researcher). Likewise, the same is true of the neighbourhood survey (participants) reflecting the transect walk (researcher). The CMs provided the opportunity to bridge any gaps and maintain balance among these different perspectives.

There were numerous benefits to using a citizen science approach in mobilising the community in this setting. I involved the mothers of U5TA in the RPS study design, data collection and analysis, ensuring the findings were grounded in their experiences as well as empowered them. Using this approach, we were able to co-design a new method of data collection, namely the mobile housing survey app, which coincided with the house visits. By conducting CMs during data collection, I ensured I took the mothers’ views into account and discussed the emerging findings with the participants. This improved the openness and reliability of the research as well as increased citizens’ participation and engagement in scientific inquiry. In addition, there was a better understanding of the citizens’ marginalisation and their inclusion in informing policy and practice, a group generally excluded from both. The barrier of digital poverty and exclusion was also mitigated by loaning all participants identical smartphones with the same amount of data credit, ensuring equal and equitable participation in the study. Although the loaned smartphones and provided data credit were facilitators for participating in the study, these were not considered “facilitators” in the Results (Map 1) because these were extraneous factors and technically an intervention, since some participants might not normally have access to them.

Despite the many benefits of the citizen approach, there were some ethical concerns that had to be taken into consideration. One concern was data quality and integrity, meaning the data collected by participants may not meet scientific standards due to a lack of participant training in scientific data management or research. I addressed this concern and ensured reliable data for scientific purposes by checking for concurrence between surveys (conducted by the participants) and house visits (conducted by the researcher-me) with the CMs.
Findings were also discussed among the supervisory team and used as an additional check. If the pandemic hadn’t happened, participants would have had also opportunities to be further involved in these steps and learn transferrable research skills, which would have been other benefits and helped maintain a non-hierarchical relationship.

Data integrity and intellectual property were also potential concerns. To address these concerns, the aims and intentions of the study and research, as well as rights and ownership of the data, were communicated clearly and openly with participants and other partners through participant information sheets and continuous feedback and interaction. This also included the results being made publicly available and shared with the LBN local authority, which would hopefully be a steppingstone towards transformational change. The meta-data were not made available in an open-access format because of security or privacy concerns, as described in the seventh ECSA principle.

**Neighbourhood Environment**

In the Neighbourhood survey, real-time data were available on ArcGIS. I could see the variety of resources accessed by participants over a short period and have the opportunity to walk in their shoes by mapping their journeys and conducting a transect walk and conducting house visits. Besides being a researcher, I also acted as a facilitator during the CMs and the days I visited Magpie by listening to the participants, learning from their experiences, and seeing if there was anything I could do to make their involvement in the study more accessible. This approach could be applied to co-designing interventions or strategies to make health resources more accessible to USTA and their families. In the Neighbourhood Environment, resource facilitators included Magpie, children’s centres/early years services, food banks and religious institutions. Barriers to access were identified, such as the cost of transport, method of transport or availability of transport (e.g., wait times for bus with a pram or buggy), and distance to travel to resources. The triangulated data from the transect walk, participant surveys and CMs demonstrated that the third sector was absolutely vital for these families in terms of
money for transport costs, nappies and food, all of which were increasing as they were moved further away to different areas. Additional challenges occurred during child health visits, including impatient doctors and staff, doctors dismissive of participants’ claims regarding child health concerns, participants feeling judged based on their parenting and prejudiced factors, language differences and not having materials available in simple English (e.g., vaccination information). These barriers have been found elsewhere, as reported in Chapter 3, but these studies did not utilise citizen science, which this study adds to the literature.

Housing Environment
In the Housing survey, numerous themes were now well documented by both the participants and researcher (me) instead of just anecdotes. The housing results provided evidence-based research, which didn’t exist yet and could inform future policy recommendations about the potential significant short- and long-term health impacts of unsuitable TA. Despite a small sample size, findings were consistent with the Children’s Commissioner “Bleak houses” report and likely to be generalisable across other similar families experiencing homelessness in England. The small sample size was an asset because it enabled collaboration between a researcher and study population which has been defined in some contexts as ‘hard to reach’ when there are inequitable barriers that actually prevent access. Participants did not report any facilitators, but upon reflection on the house visits, I observed participants’ resilience and determination to fix their environment (e.g. Section III), which could be perceived as facilitators. Furthermore, neighbours or flat/housemates were reported as barriers (e.g. Section I), but whether they acted as facilitators at times was unclear. Therefore, future research could further explore the role of neighbours.

Barriers to optimal health outcomes in the housing environment included overcrowding and/or shared facilities, bad housemates, dampness/mould growth, infestations/vermin; structural problems/disrepair; unsafe electrics; excessively cold temperatures; and unsafe surfaces that risk causing trips/falls including stairwells.
No facilitators were identified on the housing level. Some findings have been identified elsewhere, however, using different methodologies. For example, TA in England have been reported overcrowded, excessively cold, and “frequently not fit for children,” concluding that “poor quality TA presents serious risks to children”. Broken windows and confined spaces were risks to injury, collision and entrapment in addition to markers of social deprivation and health inequality. In a UK cohort study of 979,383 children, injury incidence rates of fractures, burns and poisonings were significantly higher in more deprived households (IRR test for trend p<0.001 for each injury type) and these gradients persisted over time. Injuries are preventable causes of morbidity, but social deprivation and poor housing environments can exacerbate this risk.

These findings are comparable to previous audits (3.5 Chapter Summary). A 2001 audit of homeless families conducted by health visitors in the UK found that housing environmental barriers, such as shared toilets and kitchen facilities, spread infection and encouraged an unhealthy diet. In 2018 and 2020, similar audits, also conducted in the UK, reported health implications for families living in TA, including poor nutrition, higher hospital admission and poor mental health). However, these audits did not address the direct causes of the built environment. Phase 2 addresses this gap by providing visual evidence accompanied by testimonials of lived experience of these barriers that occur in the TA housing environment, conducted in collaboration with the experts by experience, families with U5TA.

4.4.2. Strengths and Limitations
There were many benefits and strengths to utilising citizen science in this phase. These included developing new methods, increased research capacity, improving openness and reliability of research, increased participation, and engagement of citizens in scientific research. However, there were multiple challenges and limitations, including working with a transient population and various technological variables. For example, due to a software malfunction error in the Survey 123 app during the main study, some of the photo data were lost; out of the 246 entries, 85
photos were missing, so there was only 65.45% of photo data for the maps. An in-depth and transparent discussion on mobile application factors such as usability and accessibility is in APPENDIX.S4.9.

A strength was embracing the citizen science approach with methodological triangulation, which facilitated a fuller, more complete picture to address the objectives. Triangulation across the three methods increased the validity of the findings, thereby providing a bi-directional, mutual exchange of ideas, learning and resources as well as collective understanding—the ultimate goal of community engagement. Citizen science projects have been prone to demographic biases like traditional biomedical research and speak ‘about’ rather than ‘with’ vulnerable groups. However, I tried to ensure this citizen science approach reduced social exclusion from the beginning by involving and empowering families, who have been previously excluded from such studies because of their demographic (i.e., not the target population and lack of digital connectivity), in the study design process and data collection as citizen scientists. I was transparent that the goal was to translate research findings into public health action i.e., publish in an international journal, co-develop cross-sector recommendations, present to the local authority and challenge current government housing policy if appropriate. In addition, the ECSA’s Ten Principles (Figure 4.2) were utilised and informed the design of the study to ensure best practices, which helped build mutual trust between the participants and me. In contrast to the more traditional top-down approach of having an auditor visit houses and tick off a box on a list, these barriers to optimising health outcomes were seen through the lens of those living there and experiencing these problems firsthand.

The sample size and use of convenience sampling possibly increased likelihood of selection bias. Nonetheless, this was the most pragmatic approach to sampling and recruitment since many participants lived and travelled in- and out-of-borough to access the charity’s services and other resources as well as due to their transient circumstances. Due to limited PhD funding, translations of all materials and interpreters were infeasible. As such, UCL REC requested the inclusion of English speakers only, which limited the diversity of the TA population that could
be represented. Likewise, the inability to obtain the socio-demographic data was also a limitation in this regard, which would have provided important context to this study and the rest of the PhD as potential indicators of health inequalities and inequities, such as ethnicity, single-parent households, place of birth, NRPF status, and multiple deprivation. I was also informed that many of Magpie’s clients reported that they suffered from hypertension, a condition that can lead to chronic cardiovascular diseases and is more prevalent among ethnic minorities in the UK. My plan was to compare these socio-demographics to families living in TA in both LBN and England to check for representativeness as well as differences with the general population. With hindsight, I could have collected my own socio-demographic data, but as recommended by the charity, I agreed to use their clients’ files because it would reduce participant burden. Since I was working in partnership with Magpie, I had to be respectful of their space and maintain a delicate balance knowing community partners often have different time and organizational priorities than academic institutions.

Furthermore, there were many challenges unique to this vulnerable and transient population, which may not have been as evident in past citizen science studies or the few that were public health-focused. Although participants remained engaged through the WhatsApp group and CMs, they had to balance other competing priorities in their lives, especially with their children and housing, so submitting surveys and scheduling house visits were not at the top of the list. This population probably had more on their plates than the average citizen participating in a study. Referencing Maslow’s hierarchy of needs, they needed to worry about shelter on the foundational level (Physiological) and based on this research and the conditions they were living in, these needs were not being met. In addition, approximately half of the participants (n=7) ran out of the provided 15GB airtime credit before the study concluded. Participants could use the loaned phones for calls, emails and essential apps but were asked to avoid “apps like YouTube” because these would use up too much data especially if the apps were left open. Were these reasonable requests? Yes, because the mothers and I discussed this during the co-development process when determining the methodology. Were these realistic? Maybe not. One participant was honest and said that they used
YouTube to entertain their baby while in TA. The data overages also indicated the lack of Wi-Fi in TA, further demonstrating digital exclusion, the need to address multiple issues at the same time, and the desire to remain connected. Thus, this occurrence was a worthwhile learning point for future studies.

In the Housing surveys, the number of entries was relatively low compared to the Neighbourhood surveys indicating nonresponse bias. Despite an agreement in place, there was an unfortunate miscommunication at the charity during the pilot where they misinformed participants that they would receive the phones as gifts after the study ended. When I corrected this error, I noticed a significant drop in the number of entries submitted from the pilot compared to the main study, even though the pilot had one-third of the participants, so it’s possible that there was a lack of enthusiasm when participants were notified. Another round of data collection may have boosted participant entries. Likewise, an option would have been to do the Housing survey separately at a different time so the study tasks were less burdensome for the participants; this would have been determined at the first CM of a new participant pool. It is unclear whether a greater sample size in the first round of data collection would have impacted thematic saturation if there were more phones. However, if I had the ability to continue one or more additional rounds, I believe there would have been greater thematic saturation because I would know what extraneous variables to consider and control for moving forward, thereby minimising data loss.

Additional technical challenges related to the GPS function and a software malfunction became apparent visually on the map data but were also confirmed during the CMs. For example, more than one participant plotted GPS coordinates in the middle of the ocean, on the opposite side of England or outside of London (APPENDIX.S4.11.Map A), which some participants attributed to their operational skills. Since I could not access families during the pandemic, I also had to do additional cross-checks in Google Maps. For example, I cross-checked individual GPS coordinate survey submissions by looking up the resource name from the image when applicable, i.e., the participant captured the practice/clinic/hospital name. I was able to do this for some destinations, mainly Magpie and the health
resources. However, this analysis was very labour-intensive, and due to the limited yet vast range of images, it wasn’t possible to replot every GPS point because I wasn’t able to determine this sort of information from the images, such as a park or the inside view of children’s centre play area. Even more so, not every participant reported their post code, but I was able to see from the database where they submitted the survey; however, this might not be the actual GPS location of their housing. For example, one participant wrote their TA was in E7 but the GPS from the app tracked the submission to an E15 post code. I only mapped the participants’ TA that I could verify from my house visits, the participants’ textbox entries, multiple GPS cluster points from the same participant under housing, or verbal confirmation during the CMs or participant sign-up process. These post codes may not be reflective of the entire TA geographic distribution because of the transientness of this population and the common practice of rehousing families out-of-borough. The in-depth analysis also took place during the pandemic when I could not reach the participants for further questions to clarify any of these above points, so I did the best I could with the data I had. If the pandemic had not occurred, participants would have been actively involved in the analyses in their roles as citizen scientists.

Fewer house visits were conducted than anticipated due to participants changing their minds and the pandemic. Even though all participants consented to the house visits when they signed up for the study, some later decided they did not want me to see their TA because they were reportedly embarrassed or didn’t want to get in trouble/feared altercation with their roommates/housemates, an issue which came to light during the CMs (CM Discussions, APPENDIX.S4.8). Safety was paramount for both the participants and researcher, so the house visits could not be enforced. Unfortunately, the pandemic had an unprecedented impact on vulnerable groups for which could not be controlled for. Contact with the participants was lost, so they were not able to participate in further analyses and dissemination of the results. Therefore, the citizen approach evolved into a hybrid of the co-created and collaborative models although this was not intentional. The study was meant to be co-created from start to finish, so the fourth and fifth ESCA principles (Figure 4.2) were only partially met, but participants were acknowledged in all study outputs.
There were pros and cons to using the citizen approach, but the pros ultimately outweighed based on these novel findings in Phase 2.

4.4.3. Implications

As discussed in the literature, the benefit of citizen science was that members of the public had a greater role within the research and recognised that they played an invaluable role by providing insights a researcher may not typically have. This study was no exception as it provided a balanced perspective of both citizens and researcher from the data collected to the co-design process. Preliminary findings led to the early discussion of these issues for U5TA and their families in the COVID-19 context after the first lockdown was mandated, resulting in a commentary for a global audience and my rationale for the UKRI-funded CHAMPIONS study. Future studies can replicate the Phase 2 study design but should ideally co-design with their community-based partners—this would lead to natural discrepancies but could still generate similar or novel findings.

Phase 2 implications highlighted the importance of policy to regulate the TA conditions across England with better monitoring of and accountability for the safety, security and regulations of TA to ensure that these environments have the infrastructure to promote and nurture optimal growth and development for under 5s to thrive in (Table 1.1). In the current homelessness accommodation policy, local authorities do not have a duty to carry out a full inspection and a hazard assessment under the HHSRS before deciding if accommodation offered to an applicant is suitable, even when the applicant has complained about noise and its conditions. However, they should verify that any accommodation is free of Category 1 hazards and is fit for human habitation. Serious hazards were frequently prevalent in the participants’ TA, demonstrating a need to enforce local authorities to check for HHSRS hazards before a new occupant moves in. Category 1 vs. Category 2 hazards are determined from a complicated system of calculating risk, which should be more transparent and understandable to the public—this explains why the HHSRS is currently under review. Nevertheless, it was abundantly clear that even these policies were not strictly implemented. Given
the time families spend living in TA (Chapter 2), this was detrimental to the child’s health and wellbeing in both the short- and long-term.\textsuperscript{3,9,14,25,30,55,56} The most reported TA post codes were: E7, E13, IG3, IG5, N8, RM6, and RM9, but there was no indication that post code was associated with better or worse TA conditions, so the housing environment findings may be generalisable outside LBN.

4.5 Chapter Summary

- To my knowledge, this was the first published citizen science study in this population of families with U5TA anywhere.
- As stated in the literature, this citizen science approach provided valuable information and insight that the researcher may not typically have.
- Citizen science can be used as a mechanism to engage with families with U5TA to identify barriers and facilitators on the community level of the concept map.
- Although there were challenges and limitations as well as trade-offs, which are present in any citizen science study, the benefits outweighed them both for the participant and the policy implications.
- The housing results provided an evidence base for the environmental hazards present in TA, which could hopefully inform future policy decisions.
- An additional study round was needed and could not be completed due to COVID lockdown, the loss of the original participants and reallocation of phones for emergency use.
- The triangulation of data drew out important themes, including poor TA housing conditions, difficulties in accessing services in the community and the importance of collaboration between parties.
- Map 1 (Results) is a summary of all the barriers and facilitators found in the neighbourhood and housing environments.
Chapter 5

Phase 3. Families Study

5.1. Overview

In this chapter, I describe Phase 3, the Families Study, and the work carried out to fulfil RO3. Using a cross-sectional survey of families with under 5s in LBN, I quantitatively explored potential barriers (e.g., unsuitable housing, parental mental health) and facilitators (e.g. community support, food banks) to optimising health outcomes and health care access during the COVID-19 pandemic for families with U5TA and their families. The pandemic added a completely new layer of risk for families, which warranted further exploration based on Phases 1-2 findings and preliminary findings from Phase 4.

I tested the hypotheses:

1) During the pandemic, living in TA and a longer duration of living in TA are associated with multiple childhood vulnerabilities: socio-economic position, food insecurity, poor housing environment, poor health care access, and poor parental mental health.

2) During the pandemic, living in TA and a longer duration of living in TA are independent predictors of self-reported parental mental health outcomes considering adjusted measures of housing environment, food security and socio-economic position.

3) TA and duration of tenure living in TA may not be the only explanatory factors for more severe symptoms of depression or anxiety, as these barriers are complex. From the first hypothesis, these childhood vulnerabilities are also predictors of poorer parental mental health.

5.2. Methods

5.2.1. Study Design

I conducted an analysis of families with under 5s living in LBN. This cross-sectional survey was conducted as part of a mixed-methods study to explore the impact of
the COVID-19 pandemic on families with under 5s across three boroughs (Tower Hamlet, LBN and Bradford), administered August-December 2020. This study was delivered through a collaboration between the UCL/Tower Hamlet’s ActEarly team (Prof. Claire Cameron, Prof. Andrew Hayward, Dr. Marcella Ucci, and Dr. Michelle Heys†), and LBN Public Health team. My role in this collaboration was to support data curation and recruitment, resources, formal analysis, validation, and visualisation, including policy briefs and dissemination of my findings to the local authority. I conceptualised the following quantitative analysis on families with U5TA. I worked with LBN Public Health Team by providing bi-weekly reports on participant recruitment and, in particular, recruited families living in temporary accommodation.

5.2.2. Survey
The secure survey platform Qualtrics was used to administer a 150-question survey via a weblink and QR code in English. The ActEarly Collaborative in Tower Hamlets and Bradford designed the survey before my involvement. Provisions were made for the survey to be completed by telephone with interpreters if needed and requested by the participant.

5.2.3. Measures
I analysed a subset of the larger study dataset with relevant variables I chose based on Phases 1-2 findings and preliminary findings from the interviews I simultaneously conducted in Phase 4. All variables I selected for analysis were self-reported and gathered through multiple choice except for postcode, duration of living in the UK, parental age, and persons per household.

Main Exposures of Interest
The main exposures of interest were twofold: (1) housing status with participants categorised as either living or not living in TA and (2) duration of living in TA.

† Professor Michelle Heys as of June 2023.
Housing status
Participants chose from seven categories of housing status (Table 5.1). The survey didn’t provide a standard definition of TA, although two examples were listed. Families were defined as living in TA if they reported living in “temporary accommodation” or “squatting”.

Duration of living in TA
Participants who reported living in TA were asked to choose from 5 options describing the duration of living (or length of stay) in TA: < six weeks or less; up to six months; 6-12 months; 12 months to 2 years; 2 years or more; or not applicable.

Outcomes of Interest
Parental mental health, healthcare access, housing environment, and food security were outcomes of interest.

Parental Mental Health
Parental mental health was linked with ACEs and the barriers that families with U5TA can experience to optimising health outcomes or accessing services, as described in Phases 1-2. Preliminary findings from Phase 4 showed that parental mental health was vital to consider alongside co-existing barriers. Parental mental health was the only health outcome available to explore within the dataset. Parental mental health, specifically self-reported depression and anxiety was the main outcome of interest.

Depression was measured by the Patient Health Questionnaire (PHQ-8) depression scale. PHQ-8 is a validated eight-item instrument to measure self-reported depressive symptoms on a 4-item scale (not at all, score=0, one or two days, score=1, more than half the days, score=2, nearly every day, score=3). Scores were standardised rank variables based on severity. A total score of 0 to 4 represented no depressive symptoms; 5 to 9, mild depression; 10 to 14, moderate; 15 to 19, moderately severe; and 20 to 24, severe. I included only participants who answered all eight questions (i.e., complete cases).
Anxiety was measured by the Generalised Anxiety Disorder (GAD-7) scale. The GAD-7 is a validated 7-item instrument with a 4-item scale (not at all, score=0, one or two days, score=1, more than half the days, score=2, nearly every day, score=3). Self-reported anxiety was reported as four standardised rank variables: 0 to 4 (no anxiety), 5 to 9 (mild anxiety), 10 to 14 (moderate anxiety) and 15 to 21 (severe anxiety). I only included participants who had answered all seven questions (i.e., complete cases).

Three additional outcomes of interest were healthcare access, housing environment (including a measure of overcrowding), and food security (including food bank access and community services). These variables, except for housing, were scored as ordinal rank because these were standardised methods for reporting.

**Healthcare Access**

Healthcare access was measured by whether families had accessed the following routine healthcare services for their children since lockdown started in March 2020. The majority of questions had a Yes/No binary response, and a binary variable was created for each:

- **Antenatal Services** comprised of i) Routine checkups, ii) Scans, iii) Whooping cough vaccine, iv) Other checks, e.g., chromosomal and neural defect screenings.
- **New Baby Checks** included i) Newborn Hearing Screening, ii) Blood Spot by Midwife, iii) New Baby Check, iv) 6 to 8 Week Check.
- **Immunisation Services** were immunisations at i) 8 Weeks, ii) 12 Weeks, iii) 16 Weeks, iv) 12 Months.
- **Child Health Reviews** were i) Routine contact with health visitor at 8-12 months, ii) Child health review at 2-2.5 years.

I created a composite total of each of these four service types indicating high, some, low, or no access with a maximum score of 4 (4=high access, 2-3=some
access, 1=low access, 0=no access) except for child health reviews which had a maximum score of 2 (2=high access, 1=some access, 0=no access). To determine whether families accessed these services given the child’s age, I developed the following age range scheme to capture the survey period:

- **Antenatal Services**: pregnant women + children under 6 months old
- **Immunisation services**: children 1-18 months old
- **New Baby Checks**: children 0-10 months old
- **Child Health Reviews**: children 7-36 months old

Lastly, there were eight questions to describe whether the participant had accessed a midwife or health visitor since lockdown began. These questions asked if respondents felt they received the support they needed and if this support was in person or over the phone. I didn’t separate these questions by the child’s age.

**Housing Environment**

Thirteen measures of Housing environment were used in this study: eleven were self-reported, and two measures of overcrowding were additionally derived from the data.

Eleven binary variables were created from participants’ yes or no responses to the presence of these eleven factors in the home, namely: (i) repairs needed in the home (i.e., all working electrical appliances), (ii) dampness/ mould, (iii) vermin, (iv) sharing facilities (e.g., kitchen, toilet and bathroom/shower facilities, clothes drying room) with people outside the household, (v) noise from neighbours, (vi) access to outdoor space, (vii) outdoor space is private or shared, (viii) outdoor space safe for children to play in, (ix) number of bedrooms, (x) large electrical appliances (e.g. washing machine, fridge) in good working order, (xi) digital access.

**Overcrowding** was calculated from the household composition data in two ways, first as a ratio and second as a binary outcome (overcrowded or not overcrowded).
There are three validated research approaches to calculate overcrowding: persons per room (PPR), bedroom standard (BS), and modified bedroom standard (MBS). All approaches were considered. I modified these variables because the required data needed for these calculations were not collected in the survey: the gender of each household member by age, number of living rooms and square footage of the dwelling unit. I did an analysis comparing all three modified overcrowding variables for the families in the TA sample, which is found in APPENDIX.S5.2. This served as a sensitivity analysis: the modified PPR, Persons Per Bedroom (PPB), was the best option with the data available and greater n-value.

**Persons Per Bedroom (PPB)**
The ratio of household occupant size to the number of bedrooms. Although not ideal, the PPB has been used in survey settings with limited resources and time. A binary variable was also created: PPB scores >2 were considered overcrowded, which has been validated elsewhere.

**Household composition**
Four household composition measures were collected: (i) persons per household, (ii) the marital status of the respondent, (iii) parental age of the respondent, and (iv) pregnancy status. Participants were asked to state how many adults and children lived in the household. They were also asked to state the ages in years of each household member over 18+ years and date of birth for anyone under 18 years—however, these age-related data were missing or implausible in the majority of cases; therefore, I was unable to use age data in estimating household composition.

**Food Security**
Food security was measured using eight survey items: four USDA module questions to calculate a composite score, a food bank access question and three types of community support questions.
**Composite Food Security**

Four survey items were taken from the United States Department of Agriculture (USDA) Household Food Security Survey Module (a validated six-item questionnaire) and used to calculate a composite food security score. The first three questions asked participants how often (often, sometimes, or never) a set of statements were true for any household member over the past two weeks. These statements included 1) food did not last, 2) could not afford balanced meals, and 3) skipped meals because there wasn’t enough money for food. The fourth question was a Yes/No response asking about hunger because there wasn’t enough money since lockdown began in March 2020. USDA scoring is based on the number of affirmatives; a higher score indicates lower food security. Since I was missing the last two module questions, I checked the literature to determine whether scoring four questions instead of six for food security was acceptable, but the answer was unclear. I took a pragmatic approach, analysed each variable separately, and then created an adapted composite 4-question score using the same USDA scoring method but with a maximum score of 7. Scores were ranked: 0-1 (Food secure), 2-4 (Low food security), 5-7 (Very low food security).

**Food bank access** The fifth survey question was whether the participant reported the household having accessed a food bank or similar service in the previous four weeks: (i) never, (ii) less than four times, or (iii) four times or more.

**Community services** The last three questions used to measure food security were Yes/No responses to receiving the following types of community support during lockdown: 1) School food vouchers, 2) Free food from local religious or voluntary organisations, 3) Other types of community support, because these responses may influence whether the family was food secure and/or needed to access a food bank.
Covariates and Potential Confounders

Potential confounding variables were selected based on the information generated from Phases 1-2 and 4. Critical barriers previously identified for which matching variables were available within the dataset were: NRPF status (as the most significant measure of access to benefits), place of birth, duration of living in the UK, ethnicity, parental age, gender, socio-economic position (measured by household income, employment status, postcode-defined indices of deprivation).

**Habitation status** was derived from two relationship questions. Participants in a relationship were asked if they lived with their partner. If they reported living with their partner, they were described as “co-habiting”.

**NRPF**

**Access to Benefits** Participants were asked to tick all the following benefits they were currently: 1) Universal credit, 2) Working Tax Credit, 3) Child Tax Credit, 4) Jobseeker’s Allowance, 5) Employment and Support Allowance, 6) None of these, 7) No recourse to public funds, 8) Prefer not to say.

I only looked at “no recourse to public funds” (NRPF) because it’s an important indicator of employment such as “right to work”, parental immigration status, access to health services and outcomes of interest. I created a binary yes/no variable labelled NRPF status from these data to describe participants having or not having recourse to public funds.

**Place of birth**

**Place of birth** was defined as UK-born or non-UK-born. “*Prefer not to say*” responses were treated as missing values. A binary variable was created from these data.
Duration of living in the UK was derived from the year of arrival in the UK subtracted from the year 2020 (when the survey was completed) for those reporting to be non-UK-born.

**Ethnicity** Participants chose from nineteen ethnic groups, including “Any other ethnic group” with a text box to specify and a twentieth option “Prefer not to say”. To be consistent with categories used by the Ministry of Housing, Communities & Government in the Statutory Homelessness Dataset, these ethnic groups were collapsed to create a new ethnicity variable as per Table 5.2: 1) White, 2) Black/African/Caribbean/Black British, 3) Asian/Asian British, 4) Mixed/Multiple ethnic groups, 5) Other ethnic groups, 6) Not known.

**Parental age** of the main respondent was self-reported in years and treated as a continuous variable.

**Gender** was defined as the sex described at birth: female, male, intersex and prefer not to say. No definition of intersex was provided. Because of this, a cross-tabulation was conducted, and a binary M/F was used for the multivariable analysis.

**Socio-economic position (SEP)**
SEP was recorded in three ways: total household income, self-reported employment status and post-code-derived indices of deprivation.

**Household Income** was the total household income from all sources counting each household member, ranked as follows: 1) Less than £5,200, 2) £5,200-10,399, 3) £10,400-15,999, 4) £16,000-20,799, 5) £20,800-25,999, 6) £26,000-36,399, 7) £36,400-51,999, 8) £52,000-77,999, 9) £78,000 or more, 10) Don't know, 11) Prefer not to say.

**Employment Status** The main respondent’s employment status at the time of the survey as shown in Table 5.4.
Postcodes

Using the complete postcodes, the following three variables were derived from the English Indices of Deprivation 2019 (IoD2019) database. These variables could only be derived from complete postcodes as they are pinpointed to exact neighbourhoods. All three variables weren’t used in a regression together because they are collinear. Maps were extracted from the IoD2019 database corresponding to each index. Each map corresponds to one variable, i.e. index:

- **Index of Multiple Deprivation (IMD):** overall deprivation by ranking each small area in England from most deprived to least deprived.

- **Barriers to Housing & Services (BHS):** the physical and financial accessibility of housing and local services.

- **Income Deprivation Affecting Children Index (IDACI):** the proportion of all children aged 0 to 15 living in income-deprived families.

5.2.4. Participants

Recruitment

Snowball sampling was used to recruit families, including pregnant women. Child-facing services of the LBN Public Health Team (health visitors, midwives, health centres, community centres, nursery and primary schools and children’s centres) distributed information sheets and Qualtrics survey links via email/phone to expectant mothers and parents/guardians of under 5s. Parents of ‘shielded children’ (e.g. clinically vulnerable) received a specific invitation via children’s centres and health visitors. Adverts for the survey were displayed on the LBN Local Authority website and social media. I contacted local third-sector organisations working with families experiencing homelessness, including Shelter England, to advertise the study, which helped increase the recruitment of families living in TA. For this opt-in survey, the information sheet and consent form were placed at the beginning of the Qualtrics survey. Participants received a £10 voucher for completing the survey, which was emailed to them or sent to their local children’s centre at their request.
Inclusion/Exclusion Criteria
For this quantitative analysis, all families with under 5s OR expecting parents/carers with/without under 5s (i.e., currently pregnant) AND a valid LBN postcode were included. Respondents could be any family member as long as they were ≥ 18 years for ethical reasons. The survey didn’t have a question about the respondent’s relationship with the child, so for the purposes of this study, I have assumed that they are parents/carers. Participants were excluded if they didn’t report their housing accommodation. Duplicate or blank submissions from the same respondent were excluded.

Due to the array of missing data, a complete case analysis (CCA)\textsuperscript{321} was conducted for the multivariable analysis using the main outcomes, exposure, and covariates of interest.

5.2.5. Analysis
I first cleaned the data in Microsoft Excel and SPSS (v.25),\textsuperscript{322} and analyses were conducted in Stata (v.17).\textsuperscript{323}

Representativeness of Sample
Before testing the main hypotheses and to better inform the interpretation of findings, I tested whether or not the sample of families with U5TA was representative of the LBN and national populations of families living in TA. Representativeness of the overall sample by TA proportion was measured using the Binomial Test to determine whether the proportion of families living in TA at the rate of households (per 1000) in the observed sample significantly differed from the known proportion of families in TA in the LBN population. I compared it to the TA proportion in Newham from two datasets to see which was the better fit and chose one known proportion for the Binomial test: 48.39 per 1,000 households in TA. However, this proportion included all TA households in LBN with/without children and expectant parents.\textsuperscript{168,174,324} I tested household composition, specifically average household size, average number of bedrooms and persons per bedroom,
which I compared with ONS Census 2011 and 2021 data based on when the data were released.\textsuperscript{325} (Table 5.2)

Lastly, I verified the representativeness of the TA sample by ethnicity and habitation status on the local level during the same period (Oct.-Dec. 2020). Given the known ethnic diversity in LBN, the results, if representative, could be extrapolated to other families living in TA but not necessarily to other London Boroughs or areas of England by ethnicity.\textsuperscript{325} I used the Statutory Homelessness Dataset\textsuperscript{168} for the test and grouped the ethnicity of the sample dataset into the same categories so they were comparable. It was important to note that in both the observed and actual population samples (Table 5.3), the ethnicity reported was only the ethnicity of the main respondent (Figure 5.1). In the Statutory Homelessness Dataset for TA, the ethnicity of the main respondent/applicant may also be from a household with/without dependent children (Figure 5.2); that count included different types of homelessness as well (e.g. staying with friends, no fixed abode, National Asylum Seeker Support accommodation, homeless on departure from institution, those owed a prevention or relief duty by the local authority).\textsuperscript{168} Despite these dataset limitations, this comparison added value by being the closest data available to verify the representativeness.

**Descriptive and Univariable Analyses**

To test the first hypothesis, I ran descriptive and univariable analyses (Chi-square, Mann-Whitney and z-tests, where appropriate) assessing relations among the main exposures of interest (living in TA and living duration in TA), outcomes (parental mental health, healthcare access, housing environment and food security) and covariates (NRPF status, Place of Birth, Ethnicity, Gender, SEP): See Tables 5.4-5.8, APPENDIX.S5.2. Distribution, measures of central tendency and variability of each outcome, covariates, and potential confounders were reported and compared between families living in TA and those not. Missing data were reported per variable n(%).
Research questions and hypotheses were refined once cross-tabulations were completed to ensure there were adequate data to answer the research questions. For example, I checked to see if there were enough healthcare access data on children’s ages to correspond with the relevant health service (antenatal, postnatal, immunisations, developmental reviews). For the healthcare access variables, the total missing n(%) of valid and non-valid cases were reported: the respondent didn’t answer the questions although their child was within the age window; didn’t provide their child’s age (which was the majority); or didn’t fit within the age windows. Parental mental outcomes had enough data (described below), which formulated the second hypothesis.

Variables that were statistically significantly associated (defined as p-value <0.05) with either main outcome in the univariable analyses were included in the multivariable analysis.

Multivariable Analysis
To test the second hypothesis, I used complete case analysis (CCA) and conducted an ordered logistic regression (OLR) using a stepwise approach. Parental mental health was my dependent variable, and the main exposures of interest were: I. Living in TA in the entire sample, and II. Duration of living in TA in the subset of families who indicated they were currently living in TA. For testing the central thesis hypothesis, I explored whether my secondary outcomes of interest had a relationship with parental mental health because these barriers and/or facilitators are multi-faceted. It’s not just living in TA that is associated with poor mental health—there are a lot of other factors involved. I use forest plots to report the odds ratios (ORs) and 95% confidence intervals (CI) of the final models to show that TA can’t be seen in isolation from other variables and that there is a comparative element. OLR model adjustments were made, which then changed these relationships. In the results, I explain why I didn’t include the healthcare access variables in the OLR and why it was not included in the refined second hypothesis as a dependent or independent variable; furthermore, this was the
reason I didn’t do elaborate structural equation modelling. Structural equation
modelling was also not appropriate due to the ordinal outcomes.\textsuperscript{329}

I determined that CCA was appropriate for OLR by conducting a count of
participants who answered all eight questions of the PHQ-8 (n=1907[94.2%]) and
seven questions of the GAD-7 (n=1918[94.8%]).\textsuperscript{330,331} Since the amount of missing
data was ~5\%, I decided against multiple imputation (MI). When fitting OLR models
on data from individuals with complete information on the relevant variables (i.e.
CCA), OLR gives unbiased estimates of the odds ratios even when the
“missingness” mechanism depends not just on some confounders but also on the
outcome. This was the likely scenario in this study and be an example of
missingness not at random (MNAR), which for other models (e.g., linear
regression) and approaches (e.g., MI) would lead to biased estimates.\textsuperscript{332} I had
planned to mediation analysis but later learned the complications involved with
OLR models, which I elaborate on in the Discussion.

In the OLR models, depressive symptoms (PHQ-8) and anxiety symptoms (GAD-7)
were the two ordinal outcomes, with Living in TA as the primary independent binary
variable.\textsuperscript{333} OLR was selected because of its advantages over binary logistic
regression, which is known as the simplified, comfortable approach for
researchers, and yet risks losing information and statistical power.\textsuperscript{328} After
reviewing the cross-tabulations, I didn’t want to risk losing the vital information
needed for policy recommendations and creating tailored strategies/programmes
for this population. I felt it was a disservice to the participants since there is a
difference between saying someone has no depression symptoms, mild
depression or severe depression compared to just depressed or not depressed,
but assuming the effect of the predictor is the same across these different levels.
Therefore, the top level (severe depression) versus all lower levels; the top two
levels (severe depression and moderately-severe depression) versus all lower
levels and so forth.\textsuperscript{328}
I. Living in TA (Whole sample)
First, a baseline model was tested to find the ORs and CIs for Living in TA without any covariates. Significantly correlated variables with the PHQ-8 or GAD-7 were added to each model simultaneously and removed in a backward stepwise approach, respectively. For example, in Model 1, all housing environment variables that were statistically significantly associated with the outcome in the univariable analysis were added at the same time. A forward stepwise approach was done for comparison, but the best-fit model ended up in the same place. I applied the rule of ten: anything less than 10% was removed from the model, and greater than 10% was considered a confounder and adjusted for. I also looked at multicollinearity in each model between the exposures and covariates; I assumed that a variance inflation factor (VIF) above 10 meant that the regression coefficients were poorly estimated due to multicollinearity. The lack of fit was checked by comparing each adjusted R and two Pulkstenis-Robinson (PR) tests or Lipsitz test, where applicable, using the ologitgof command in Stata. Four models tested the hypothesis: Model 1 (exposure & housing environment variables), Model 2 (exposure & socio-demographics), Model 3 (exposure & food security), and Model 4 (exposure & the best fit of Models 1-3 [all significant variables included]).

II. Living Duration in TA (Families in TA sample)
I followed a similar approach to test duration of tenure living in TA as the primary independent variable. Few variables had significant correlations with PHQ-8 or GAD-7 in the TA subset, so I decided to combine all significant variables at once. The first set of models was not promising, with very large CIs and multicollinearity among the duration in TA categories, likely due to the small sample size. Therefore, I converted living duration into a binary variable for the multivariable analysis. Living duration was divided into < 12 months and ≥ 12 months based on cross-tabulation results and distributions. Due to the challenges with this variable, I ran five models to determine the best fit.
5.3. Results

A total of 2,054 families reported valid postcodes within LBN, of whom 2,024 reported their housing status—the remaining 30 families were excluded giving a total sample size of 2,024 (Table 5.1).

Table 5.1- Final Sample- Inclusion/Exclusion

<table>
<thead>
<tr>
<th>Housing Situation</th>
<th>Frequency (n)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own it outright</td>
<td>698</td>
<td>33.98</td>
</tr>
<tr>
<td>Buying it with the help of a mortgage</td>
<td>558</td>
<td>27.17</td>
</tr>
<tr>
<td>Shared ownership</td>
<td>149</td>
<td>7.25</td>
</tr>
<tr>
<td>Rent it</td>
<td>480</td>
<td>23.37</td>
</tr>
<tr>
<td>Live here rent free</td>
<td>55</td>
<td>2.68</td>
</tr>
<tr>
<td>Temporary accommodation</td>
<td>81</td>
<td>3.94</td>
</tr>
<tr>
<td>Squatting</td>
<td>3</td>
<td>0.15</td>
</tr>
<tr>
<td>Missing</td>
<td>30</td>
<td>1.46</td>
</tr>
<tr>
<td>Total</td>
<td>2,054</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Of this sample of 2,024, 84 families (4.2%) lived in TA, most of whom (96.4%) reported living in traditional TA (Table 5.1). Just under 2/3rds of these families resided in TA for ≥ 12 months.

Representativeness of the Sample

Given LBN population rates of living in TA (32 per 1000 households with children and 47 per 1000 households overall), the observed number of households (n=84) was similar to the expected number of households 97 (CI 94-98). Similarly, the sample was representative of the LBN population in terms of average household size, number of bedrooms and persons per bedroom (PPB). The characteristics of those living in TA in this sample were representative of families across LBN living in TA/ experiencing homelessness by ethnicity and habitation status (Tables 5.2 and 5.3; Figures 5.1 and 5.2). However, the comparative data show the participants who were not currently living in TA were not representative of the overall population of families in Newham – they were predominantly white British and of a higher household income.
Table 5.2. Housing and Household Composition Comparisons Between Sample with Wider Population of London Borough of Newham

<table>
<thead>
<tr>
<th>Comparison Variable</th>
<th>Non-TA Mean 95%CI n (%)</th>
<th>TA Mean 95%CI n (%)</th>
<th>Total Mean 95%CI n (%)</th>
<th>LBN Census 2011 Population Mean N n (%)</th>
<th>LBN Census 2021 Population Mean N n (%)</th>
<th>England Census 2021 Population Mean N n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Household Size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>Mean= 2.98</td>
<td>Mean= 2.99</td>
<td>Mean= 2.99</td>
<td>Mean=3.00</td>
<td>Mean= 2.62</td>
<td>Mean= 2.26</td>
</tr>
<tr>
<td>95%CI</td>
<td>2.93-3.03</td>
<td>2.65-3.32</td>
<td>2.93-3.03</td>
<td>N= 306,009</td>
<td>N= 115,508</td>
<td>N= 23,436,088</td>
</tr>
<tr>
<td>N</td>
<td>1,926 (95.87)</td>
<td>83 (4.13)</td>
<td>2,009 (100.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of Bedrooms</strong></td>
<td>Mean= 2.67</td>
<td>Mean= 2.32</td>
<td>Mean= 2.65</td>
<td>Mean=2.38</td>
<td>Mean=2.11</td>
<td>Mean= 2.71</td>
</tr>
<tr>
<td>95%CI</td>
<td>2.63-2.70</td>
<td>2.02-2.62</td>
<td>2.62-2.69</td>
<td>N= 101,058</td>
<td>N= 115,507</td>
<td>N= 23,436,085</td>
</tr>
<tr>
<td>1</td>
<td>127 (6.57)</td>
<td>31 (36.90)</td>
<td>158 (7.83)</td>
<td>21,437 (21.21)</td>
<td>24,647 (21.34)</td>
<td>2,723,171 (11.62)</td>
</tr>
<tr>
<td>2</td>
<td>624 (32.28)</td>
<td>24 (28.57)</td>
<td>648 (32.13)</td>
<td>33,460 (33.11)</td>
<td>37,793 (32.72)</td>
<td>6,394,723 (27.29)</td>
</tr>
<tr>
<td>3</td>
<td>967 (32.13)</td>
<td>11 (13.10)</td>
<td>978 (48.49)</td>
<td>35,202 (34.83)</td>
<td>36,988 (32.02)</td>
<td>9,373,469 (40.00)</td>
</tr>
<tr>
<td>4</td>
<td>192 (9.93)</td>
<td>7 (8.33)</td>
<td>199 (9.87)</td>
<td>8,193 (8.11)</td>
<td>16,079 (13.92)</td>
<td>4,944,722 (21.10)</td>
</tr>
<tr>
<td>5</td>
<td>23 (1.19)</td>
<td>11 (13.10)</td>
<td>34 (1.69)</td>
<td>2,766 (2.74)</td>
<td>(Part of 16,079; reported ≥ 4 bedrooms)</td>
<td>(Part of 4,944,722; reported ≥ 4 bedrooms)</td>
</tr>
<tr>
<td>Total</td>
<td>1,933 (100.00)</td>
<td>84 (100.00)</td>
<td>2,017 (100.00)</td>
<td>101,058 (100.00)</td>
<td>115,507 (100.00)</td>
<td>23,436,085 (100.00)</td>
</tr>
<tr>
<td><strong>Persons Per Bedroom</strong></td>
<td>Mean= 2.98</td>
<td>Mean= 2.99</td>
<td>Mean= 2.99</td>
<td>Mean=3.00</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>95%CI</td>
<td>2.93-3.03</td>
<td>2.65-3.32</td>
<td>2.93-3.03</td>
<td>N= 306,009</td>
<td>NA</td>
<td>N= 23,436,085</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Habitation Status</th>
<th>Non-TA n (%)</th>
<th>TA n (%)</th>
<th>Total n (%)</th>
<th>Statutory Homeless LBN n(%)</th>
<th>Statutory Homeless England n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>177 (10.00)</td>
<td>53 (68.83)</td>
<td>230 (12.45)</td>
<td>2,267 (65.67)</td>
<td>39,580 (72.23)</td>
</tr>
<tr>
<td>Co-Habiting</td>
<td>1,593 (90.00)</td>
<td>24 (31.17)</td>
<td>1,617 (87.55)</td>
<td>1,185 (34.33)</td>
<td>15,220 (27.77)</td>
</tr>
</tbody>
</table>

NA means the data were not available based on data reported by ONS. Census data were used because it contained the comparison variables reflecting both samples: TA and non-TA.
Table 5.3. Ethnicity: Sample of Families in TA Compared to LBN Statutory Homeless Population

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Sample in TA n(%)</th>
<th>Statutory Homeless LBN n(%)</th>
<th>Statutory Homeless England N(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>14 (16.70%)</td>
<td>78 (16.70%)</td>
<td>44,120 (69.00%)</td>
</tr>
<tr>
<td>Black / African / Caribbean / Black British</td>
<td>24 (28.60%)</td>
<td>159 (34.10%)</td>
<td>6,330 (10.00%)</td>
</tr>
<tr>
<td>Asian / Asian British</td>
<td>29 (34.50%)</td>
<td>160 (34.30%)</td>
<td>3,790 (6.00%)</td>
</tr>
<tr>
<td>Mixed / Multiple ethnic groups</td>
<td>5 (6.00%)</td>
<td>23 (4.90%)</td>
<td>1,940 (3.00%)</td>
</tr>
<tr>
<td>Other ethnic groups</td>
<td>6 (7.10%)</td>
<td>21 (4.50%)</td>
<td>2,310 (4.00%)</td>
</tr>
<tr>
<td>Not known</td>
<td>6 (7.10%)</td>
<td>26 (5.60%)</td>
<td>5,510 (9.00%)</td>
</tr>
<tr>
<td>Total</td>
<td>84 (100.00%)</td>
<td>467 (100.00%)</td>
<td>63,990 (100.00%)</td>
</tr>
</tbody>
</table>
Figures 5.1 and 5.2 Ethnicity: Sample of Families in TA Compared to LBN Statutory Homeless Population

Ethnicity was condensed into six categories (Figures 5.1 and 5.2) based on the categories used by the Ministry of Housing, Communities & Government in the Statutory Homelessness Dataset. Figure 5.1 on the left is the ethnic composition of the sample of families in living TA, and the figure on the right side (Figure 5.2) is the ethnic composition of families in TA in LBN to compare for representativeness.
I. Socio-Demographics
Compared to families in non-TA, families living in TA were statistically significantly more likely to be from non-white British ethnic backgrounds, report lower socio-economic position as measured by household income and IDACI, be unemployed, report NRPF status and be single-parent households. Parents/carers living in TA tended to be slightly younger (\(u=31.7\) years), more likely to be female and less likely to be pregnant (Table 5.4, Figure 5.3, Table 5.4; Map 5.1; APPENDIX.S5.1.Maps 1-2).

There were no significant associations by IMD Decile and parental stage or pregnancy status. Notably, there was no determinable difference in measures of barriers to housing and services between families according to whether or not they were living in temporary accommodation, all families were of the most deprived decile (Table 5.4). This is not surprising given at the aggregate level, the entire population of LBN is in the most deprived decile (see Map 5.1 for a visual representation of this).

Almost two-thirds (68.8%) of parents living TA were more likely to be born outside the UK compared to non-TA (20.9%) (Table 5.4, Figure 5.3). Of parents who reported their place of birth, those living in TA and who were non-UK born tended to have resided in the UK for a shorter duration (Table 5.4). In addition, 25.0% of non-UK-born parents in TA had NRPF status and 60.8% lived in TA for \(\geq 12\) months (APPENDIX.S5.2). All participants living in TA who reported NRPF status were also unemployed.
Table 5.4. Socio-Demographics

<table>
<thead>
<tr>
<th>Socio-Demographic Variable</th>
<th>Non-TA n (%)</th>
<th>TA n (%)</th>
<th>Total n (%)</th>
<th>Missing Valid Cases n (%)</th>
<th>Association</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1,389 (71.82) ♠</td>
<td>14 (16.67)</td>
<td>1,403 (69.52) ♠</td>
<td></td>
<td>158.8851</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Black/African/Caribbean</td>
<td>98 (5.07)</td>
<td>24 (28.57)</td>
<td>122 (6.05)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Asian British</td>
<td>323 (16.70)</td>
<td>29 (34.52) ♠</td>
<td>352 (17.44)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed/Multiple Ethnic Groups</td>
<td>61 (3.15)</td>
<td>5 (5.95)</td>
<td>66 (3.27)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Ethnic Groups</td>
<td>45 (2.33)</td>
<td>6 (7.14)</td>
<td>51 (2.53)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Known</td>
<td>18 (0.93)  ◇</td>
<td>6 (7.14)</td>
<td>24 (1.19)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,934 (100.00)</td>
<td>84 (100.00)</td>
<td>2,018 (100.00)</td>
<td>6 (0.30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>734 (38.37)</td>
<td>6 (7.32)</td>
<td>740 (37.09)</td>
<td></td>
<td>72.8503</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td>1,164 (60.85) ♠</td>
<td>70 (85.37) ♠</td>
<td>1,234 (61.85) ♠</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersex</td>
<td>1 (0.05)  ◇</td>
<td>2 (2.44)  ◇</td>
<td>3 (0.15)  ◇</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Prefer Not to Say</td>
<td>14 (0.73)</td>
<td>4 (4.88)</td>
<td>18 (0.90)</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,913 (100.00)</td>
<td>82 (100.00)</td>
<td>1,995 (100.00)</td>
<td>29 (1.43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parent Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean=33.00 years SD=4.44</td>
<td>1,575 (97.58)</td>
<td>39 (2.42)</td>
<td>1,614 (100.00)</td>
<td>410 (20.26)</td>
<td>1.8336</td>
<td>0.0334</td>
</tr>
<tr>
<td>Mean=31.67 years SD=5.87</td>
<td>39 (2.42)</td>
<td>Mean=32.97 years SD=4.48</td>
<td>410 (20.26)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Employment Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>184.8222</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Employed</td>
<td>1,087 (56.94) ♠</td>
<td>8 (10.13)</td>
<td>1,095 (55.08) ♠</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furlough</td>
<td>124 (6.50)</td>
<td>3 (3.80)</td>
<td>127 (6.39)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

♠ indicates the highest value in each group
◊ indicates the lowest value in each group

Note: only valid cases reported, i.e., those reporting housing status.
| Maternity leave | 198 (10.37) | 4 (5.06) | 202 (10.16) |
| Self-employed Working | 122 (6.39) | 1 (1.27) | 123 (6.19) |
| Self-employed Not working | 43 (2.25) ◊ | 0 (0.00) ◊ | 43 (2.16) ◊ |
| Unemployed | 188 (9.85) | 36 (45.57) ♠ | 224 (11.27) |
| Unemployed Receiving Benefits | 147 (7.70) | 27 (34.18) | 174 (8.75) |
| Total | 1,909 (100.00) | 79 (100.00) | 1,988 (100.00) | 36 (1.78) |

| No Recourse to Public Funds (NRPF) Status | 101.0507 | <0.001 |
| Access to Public Funds | 1,886 (97.22) ♠ | 64 (76.19) ♠ | 1,950 (96.34) ♠ |
| NRPF Status | 54 (2.78) ◊ | 20 (23.81) ◊ | 74 (3.66) ◊ |
| Total | 1,940 (100.00) | 84 (100.00) | 2,024 (100.00) | 0 (0.00) |

| Place of Birth | 99.7161 | <0.001 |
| UK-Born | 1,523 (79.08) ♠ | 25 (31.25) ◊ | 1,548 (77.17) ♠ |
| Non-UK-Born | 403 (20.92) ◊ | 55 (68.75) ♠ | 458 (22.83) ◊ |
| Total | 1,926 (100.00) | 80 (100.00) | 2,006 (100.00) | 18 (0.01) |

| Duration Living in UK for Non-UK-Born | 3.3732 | 0.0004 |
| Mean=11.77 years | Mean=7.77 years | Mean=11.30 years | 11 (2.40) *of those non-UK born |
| Total | 1,940 (100.00) | 84 (100.00) | 2,024 (100.00) | 0 (0.00) |

<p>| Parental Stage | 2.5260 | 0.283 |
| Child Under 5 | 1,716 (88.45) ♠ | 79 (94.05) ♠ | 1,795 (88.69) ♠ |
| Pregnant | 126 (6.49) | 3 (3.57) | 129 (6.37) |</p>
<table>
<thead>
<tr>
<th>Pregnant with Child Under 5</th>
<th>98 (5.05) ◊</th>
<th>2 (2.38) ◊</th>
<th>100 (4.94) ◊</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1,940 (100.00)</td>
<td>84 (100.00)</td>
<td>2,024 (100.00)</td>
</tr>
</tbody>
</table>

| Pregnant | 224 (11.55) ◊ | 5 (5.95) ◊ | 229 (11.31) ◊ |
| Not Pregnant | 1,716 (88.45) ♠ | 79 (94.05) ♠ | 1,795 (88.69) ♠ |
| Total | 1,940 (100.00) | 84 (100.00) | 2,024 (100.00) | 0 (0.00) |

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>270.1120 &lt;0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married/civil partnership</td>
<td>1,650 (85.49) ♠</td>
</tr>
<tr>
<td>Not married in a relationship</td>
<td>119 (6.17)</td>
</tr>
<tr>
<td>Single</td>
<td>127 (6.58)</td>
</tr>
<tr>
<td>Do not wish to answer</td>
<td>34 (1.76) ◊</td>
</tr>
<tr>
<td>Total</td>
<td>1,930 (100.00)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Habitation Status</th>
<th>234.2653 &lt;0.001</th>
</tr>
</thead>
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<tr>
<td>Single</td>
<td>177 (10.00) ◊</td>
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<tr>
<td>Co-Habiting</td>
<td>1,593 (90.00) ♠</td>
</tr>
<tr>
<td>Total</td>
<td>1,770 (100.00)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household Income</th>
<th>9.398 0.001</th>
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</thead>
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<tr>
<td>Less than £5,200</td>
<td>42 (2.42) ◊</td>
</tr>
<tr>
<td>£5,200-10,399</td>
<td>77 (4.43)</td>
</tr>
<tr>
<td>£10,400-15,999</td>
<td>61 (3.51)</td>
</tr>
<tr>
<td>£16,000-20,799</td>
<td>94 (5.41)</td>
</tr>
<tr>
<td>£20,800-25,999</td>
<td>136 (7.83)</td>
</tr>
<tr>
<td>£26,000-36,399</td>
<td>410 (23.60)</td>
</tr>
<tr>
<td>£36,400-51,999</td>
<td>413 (23.78) ♠</td>
</tr>
<tr>
<td>£52,000-77,999</td>
<td>369 (21.24)</td>
</tr>
<tr>
<td>£78,000 or more</td>
<td>135 (7.77)</td>
</tr>
<tr>
<td>Total</td>
<td>1,737 (100.00)</td>
</tr>
<tr>
<td>Index of Multiple Deprivation Decile</td>
<td>1 (Most Deprived)</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>1 (Most Deprived)</td>
<td>29 (1.53)</td>
</tr>
<tr>
<td>2</td>
<td>578 (30.50)</td>
</tr>
<tr>
<td>3</td>
<td>866 (45.70) ♠</td>
</tr>
<tr>
<td>4</td>
<td>293 (15.46)</td>
</tr>
<tr>
<td>5</td>
<td>117 (6.17)</td>
</tr>
<tr>
<td>6</td>
<td>7 (0.37)</td>
</tr>
</tbody>
</table>

| Total | 1,895 (100.00) | 84 (100.00) | 1,979 (100.00) | 45 (2.22) |

<table>
<thead>
<tr>
<th>IDACI Decile</th>
<th>1 (Most Deprived)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7 (Least Deprived)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Most Deprived)</td>
<td>62 (3.27)</td>
<td>84 (100.00)</td>
<td>66 (3.34)</td>
<td>396 (20.01)</td>
<td>62 (3.11)</td>
<td>22 (1.16)</td>
<td>0 (0.00)</td>
<td>1,895 (100.00)</td>
</tr>
<tr>
<td>2</td>
<td>388 (20.47)</td>
<td>8 (9.52)</td>
<td>25 (29.76)</td>
<td>396 (20.01)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>1,895 (100.00)</td>
</tr>
<tr>
<td>3</td>
<td>647 (34.14) ♠</td>
<td>25 (29.76)</td>
<td>672 (33.96)</td>
<td>22 (1.16)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>1,895 (100.00)</td>
</tr>
<tr>
<td>4</td>
<td>470 (24.80)</td>
<td>24 (28.57)</td>
<td>494 (24.96)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>1,895 (100.00)</td>
</tr>
<tr>
<td>5</td>
<td>251 (13.25)</td>
<td>16 (19.05)</td>
<td>267 (13.49)</td>
<td>22 (1.16)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>1,895 (100.00)</td>
</tr>
<tr>
<td>6</td>
<td>55 (2.90)</td>
<td>7 (8.33)</td>
<td>62 (3.13)</td>
<td>22 (1.16)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>1,895 (100.00)</td>
</tr>
<tr>
<td>7 (Least Deprived)</td>
<td>22 (1.16)</td>
<td>0 (0.00)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>22 (1.16)</td>
<td>1,895 (100.00)</td>
</tr>
</tbody>
</table>

| Total | 1,895 (100.00) | 84 (100.00) | 1,979 (100.00) | 45 (2.22) |

<table>
<thead>
<tr>
<th>Barriers to Housing and Services Decile</th>
<th>1 (Most Deprived)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7 (Least Deprived)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Most Deprived)</td>
<td>1,895 (100.00) ♠</td>
<td>84 (100.00) ♠</td>
<td>1,979 (100.00) ♠</td>
<td>45 (2.22)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,895 (100.00)</td>
<td>84 (100.00)</td>
<td>1,979 (100.00)</td>
<td>45 (2.22)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
II. Parental Mental Health

A significantly higher proportion of participants living in TA had severe cases of both self-reported depression and anxiety. In TA, 15.3% and 11.1% of parents had symptoms of severe depression, and moderately severe depression compared 1.1% and 4.6% of those in non-TA, respectively. 22.9% of parents living in TA had severe anxiety compared to 4.0% of those in non-TA (Figure 5.4, Table 5.5).23

88.2% experienced depressive symptoms when they had been living in TA for 12 months to 2 years, and 69.6% for ≥ 2 years. 76.5% experienced anxiety symptoms when living in TA for 12 months to 2 years, and 61.9% for ≥ 2 years. There weren’t any specific trends in symptom severity as an ordinal variable (APPENDIX.S5.2). As
such, these relationships were further explored in the multivariable analysis. Living duration only had a statistically significant association with depression ($p<0.05$). There were significantly more parents with severe symptoms of depression (~2.7x) and anxiety (~4.3x) who had lived in TA ≥ 12 months.

Figure 5.4. Comparisons Between Households in TA and Non-TA: Parental Mental Health
Table 5.5. Parental Mental Health

♠ indicates the highest value in each group
◊ indicates the lowest value in each group
Note: only valid cases reported i.e., those reporting housing status.

<table>
<thead>
<tr>
<th>Parental Mental Health Variable</th>
<th>Non-TA n (%)</th>
<th>TA n (%)</th>
<th>Total n (%)</th>
<th>Missing n (%)</th>
<th>Association</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depression PHQ-8 Ranks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Depressive Symptoms</td>
<td>471 (25.67)</td>
<td>22 (30.56) ♠</td>
<td>493 (25.85)</td>
<td></td>
<td></td>
<td>99.3687</td>
</tr>
<tr>
<td>Mild Depression</td>
<td>595 (32.43)</td>
<td>22 (30.56) ♠</td>
<td>617 (32.35)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Depression</td>
<td>659 (35.91) ♠</td>
<td>9 (12.50) ◊</td>
<td>668 (35.03) ♠</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately Severe Depression</td>
<td>89 (4.85)</td>
<td>8 (11.11) ◊</td>
<td>97 (5.09)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe Depression</td>
<td>21 (1.14) ◊</td>
<td>11 (15.28)</td>
<td>32 (1.68) ◊</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,835 (100.00)</td>
<td>72 (100.00)</td>
<td>1,907 (100.00)</td>
<td>117 (5.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Anxiety GAD-7 Ranks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Anxiety Symptoms</td>
<td>560 (30.30)</td>
<td>28 (40.00) ♠</td>
<td>588 (30.66)</td>
<td></td>
<td></td>
<td>63.2430</td>
</tr>
<tr>
<td>Mild Anxiety</td>
<td>753 (40.75) ♠</td>
<td>12 (17.14)</td>
<td>765 (39.89) ♠</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Anxiety</td>
<td>461 (24.95)</td>
<td>14 (20.00) ◊</td>
<td>475 (24.77)</td>
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</tr>
<tr>
<td>Severe Anxiety</td>
<td>74 (4.00) ◊</td>
<td>16 (22.86)</td>
<td>90 (4.69) ◊</td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td>1,848 (100.00)</td>
<td>70 (100.00)</td>
<td>1,918 (100.00)</td>
<td>106 (5.24)</td>
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</tbody>
</table>
III. Healthcare Access

Most variables by child’s age had no association with either living in TA or duration in TA (Appendix.S5.2).

For Antenatal Care, more than double percentwise of households in TA (45.0%) compared to households in non-TA (21.1%) didn’t access any of the four services: routine check-ups, scans, whooping cough vaccine and other checks, including chromosomal and neural defect screenings (Table 5.6). As a composite score, antenatal care was clinically and statistically significant. All families reported they needed access to a midwife, but 73.3% of families in TA were unable to access one compared to 59.0% of families in non-TA. When they were able to access midwifery support, families living in TA (54.6%) accessed in person rather than over the phone and reported they mostly received (58.3%) or didn’t receive (8.3%) the support they needed.

For key Immunisations, 35.9% of families in TA and 46.5% of families in non-TA didn’t access these services at all. However, many households living in non-TA and TA accessed individual immunisation services at 8 weeks, 12 weeks, 16 weeks, and 12 months (Table 5.6).

For New Baby Checks, families living in TA (28.6%) and non-TA (19.6%) didn’t access these services. Conversely, both families reported high access 61.9% and 61.3%, respectively. These individual services: Newborn Hearing Screening, Blood Spot by Midwife, New Baby Check and 6-to-8-week Check, are reported in Table 5.6.

For routine health checks and Child Health Reviews at 8-12 months and 2-2.5 years, 58.5% of families living in TA and 66.1% of those in non-TA didn’t access these services. Families living in TA (68.4%) and non-TA (69.6%) reported they needed access to a health visitor and accessed support over the phone, but 25.0% of TA and 25.5% of non-TA were unable to access one (Table 5.6).
Healthcare access variables were not included as an independent or dependent variable in the multivariable analysis due to the amount of missing data, nonsignificant associations with the exposures or parental mental health, and the unreliability/inconsistency of how the questions were posed to the families. For example, only three access questions had a non-applicable answer choice: Child Health Reviews and routine health checks at 8-12 months and 2-2.5 years. Therefore, there was no way to distinguish whether families didn’t access certain services because a) they didn’t need them or b) needed them and/or were due to access these services and had not accessed them yet. Although the composite antenatal services had a significant association with living in TA, it had fewer complete cases of the PHQ-8 and GAD-7, and this association with parental mental health was statistically insignificant.
Table 5.6. Health Care Access

<table>
<thead>
<tr>
<th>Health Care Access Variable</th>
<th>Non-TA n (%)</th>
<th>TA n (%)</th>
<th>Total n (%)</th>
<th>Missing n (%)</th>
<th>Correlation Value</th>
<th>P-Value</th>
</tr>
</thead>
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<td>Antenatal Services</td>
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<td></td>
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<tr>
<td>No Access</td>
<td>75 (21.13)</td>
<td>9 (45.00)</td>
<td>84 (22.40)</td>
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<tr>
<td>Low Access</td>
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<td>1 (5.00)</td>
<td>23 (6.13)</td>
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</tr>
<tr>
<td>Some Access</td>
<td>154 (43.38)</td>
<td>6 (30.00)</td>
<td>160 (42.67)</td>
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<tr>
<td>High Access</td>
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<td>108 (28.80)</td>
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<tr>
<td>Total</td>
<td>355 (100.00)</td>
<td>20 (100.00)</td>
<td>375 (100.00)</td>
<td>1,649 (81.47)</td>
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<td>• Routine Check-ups</td>
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<td>0.4785</td>
<td>0.489</td>
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<tr>
<td>No</td>
<td>64 (20.85)</td>
<td>4 (28.57)</td>
<td>68 (21.58)</td>
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<td></td>
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<tr>
<td>Yes</td>
<td>243 (79.15)</td>
<td>10 (71.43)</td>
<td>253 (78.82)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>307 (100.00)</td>
<td>14 (100.00)</td>
<td>321 (100.00)</td>
<td>1,703 (84.14)</td>
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<td></td>
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<tr>
<td>• Scans</td>
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<td></td>
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<td>0.3817</td>
<td>0.537</td>
</tr>
<tr>
<td>No</td>
<td>84 (28.09)</td>
<td>5 (35.71)</td>
<td>89 (28.43)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>215 (71.91)</td>
<td>9 (64.29)</td>
<td>224 (71.57)</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>299 (100.00)</td>
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<td>313 (100.00)</td>
<td>1,711 (84.54)</td>
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<tr>
<td>• Whooping Cough</td>
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<td>No</td>
<td>117 (38.74)</td>
<td>6 (42.86)</td>
<td>123 (38.92)</td>
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<tr>
<td>Yes</td>
<td>185 (61.26)</td>
<td>8 (57.14)</td>
<td>193 (61.08)</td>
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</tr>
<tr>
<td>Total</td>
<td>302 (100.00)</td>
<td>14 (100.00)</td>
<td>316 (100.00)</td>
<td>1,708 (84.39)</td>
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<tr>
<td>• Other checks</td>
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*Note: The Missing values may not add up with the Total because there were only subsets of data available. Thus, the percentage of the Missing variables is divided by the Total number of individuals who reported their housing type. Composite access totals are higher than totals from individual services because it's the sum of all the different participants who responded to those questions.

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IV. Housing Environment

Generally, families living in TA were exposed to more environmental hazards in housing than those not living in TA, including dampness and/or mould growth, trouble with vermin, pests, or infestations, and poorer digital access. Families living in TA had a statistically and clinically significant proportion of homes defined as overcrowded and with fewer bedrooms despite having similar household sizes. Families living in TA were more likely to share facilities with members outside their households, including outdoor space. However, more than half of households in TA had no access to outdoor space (Table 5.7, Figure 5.3). These variables showed no significant association with living in TA: noise from neighbours, shared clothes and drying room, shared toilet and bathroom facilities, outdoor space private or shared, and safety of the outdoor space if applicable. The remaining variables were significantly correlated with living in TA. Roughly twice as many, percentage-wise, of households in TA needed major repairs in the home and/or didn’t have large electrical appliances in good working order (Table 5.7, Figure 5.3). A greater proportion of families, who lived in TA for ≥ 12 months, experienced these housing issues.
Table 5.7. Housing Environment

♠ indicates the highest value in each group
◊ indicates the lowest value in each group
Note: only valid cases reported i.e., those reporting housing status.

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<td><strong>Outdoor Space Safe for Children to Play</strong></td>
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<td><strong>Dampness/Mould</strong></td>
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<td>Total</td>
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<td><strong>Presence of Vermin</strong></td>
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<td>Facility</td>
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<td>Total</td>
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<tr>
<td><strong>Noise from Neighbours</strong></td>
<td>995 (51.69)</td>
<td>930 (48.31)</td>
<td>1,925 (100.00)</td>
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<tr>
<td><strong>Shared Kitchen Facilities</strong></td>
<td>582 (30.00)</td>
<td>1,358 (70.00)</td>
<td>1,940 (100.00)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Shared Clothes and Drying Rooms</strong></td>
<td>473 (24.38)</td>
<td>1,467 (75.62)</td>
<td>1,940 (100.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shared Toilet and Bathroom Facilities</strong></td>
<td>436 (22.47)</td>
<td>1,504 (77.53)</td>
<td>1,940 (100.00)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
V. Food Security

Families living in TA tended to have greater food insecurity across all measures except for school food vouchers (Table 5.8). A far greater proportion (60.9%) of not living in TA were food secure compared to those living in TA (22.2%). Households in TA reported high rates of skipping meals, having insufficient food, and not being able to buy nutritious meals. Of note, both TA (39.2%) and non-TA (24.3%) reported hunger during lockdown and didn’t eat because there wasn’t enough money for food. More households in TA also reported having received school food vouchers, free food from local religious and voluntary organisations, and other types of community support as well as more frequent use of food banks, which were potential mitigating strategies (Table 5.8, Figure 5.3). Among the TA sample, 54.6% reported very low food security if they lived in TA for ≥ 12 months.
Table 5.8. Food Security

<table>
<thead>
<tr>
<th>Food Security Variable</th>
<th>Non-TA n (%)</th>
<th>TA n (%)</th>
<th>Total n (%)</th>
<th>Missing n (%)</th>
<th>Association</th>
<th>P-value</th>
</tr>
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<tbody>
<tr>
<td>Composite Food Security Rank</td>
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<td></td>
<td></td>
<td></td>
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<td>-6.319</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Chi2</td>
<td>43.0374</td>
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</tr>
<tr>
<td>Food Secure</td>
<td>1,131 (60.90)♠</td>
<td>16 (22.22)◊</td>
<td>1,147 (59.46)♠</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Low Food Security</td>
<td>411 (22.13)</td>
<td>32 (44.44)♠</td>
<td>443 (22.97)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low Food Security</td>
<td>315 (16.96)◊</td>
<td>24 (33.33)</td>
<td>339 (17.57)◊</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,857 (100.00)</td>
<td>72 (100.00)</td>
<td>1,929 (100.00)</td>
<td>95 (4.69)</td>
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</tr>
<tr>
<td>Food did not last</td>
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<td></td>
<td>64.9536</td>
</tr>
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<td>1,135 (63.02)♠</td>
<td>11 (14.10)◊</td>
<td>1,146 (58.00)♠</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes True</td>
<td>473 (24.92)</td>
<td>39 (50.00)♠</td>
<td>512 (25.91)</td>
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<tr>
<td>Often True</td>
<td>290 (15.28)◊</td>
<td>28 (35.90)</td>
<td>318 (16.09)◊</td>
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<td>1,976 (100.00)</td>
<td>48 (2.37)</td>
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<tr>
<td>Could not afford balanced meals</td>
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<td></td>
<td></td>
<td></td>
<td>50.5667</td>
</tr>
<tr>
<td>Never True</td>
<td>1,193 (63.02)♠</td>
<td>18 (23.08)◊</td>
<td>1,211 (61.44)♠</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes True</td>
<td>397 (20.97)</td>
<td>35 (44.87)♠</td>
<td>432 (21.92)</td>
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<td></td>
</tr>
<tr>
<td>Often True</td>
<td>303 (16.01)◊</td>
<td>25 (32.05)</td>
<td>328 (16.64)◊</td>
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<tr>
<td>Total</td>
<td>1,893 (100.00)</td>
<td>78 (100.00)</td>
<td>1,971 (100.00)</td>
<td>53 (2.62)</td>
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♠ indicates the highest value in each group
◊ indicates the lowest value in each group
Note: only valid cases reported, i.e., those reporting housing status.
<table>
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<tr>
<th>Could not afford balanced meals</th>
<th>50.5667</th>
<th>&lt;0.001</th>
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<tr>
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<td></td>
</tr>
<tr>
<td>1,193 (63.02) ♠</td>
<td>18 (23.08) ◊</td>
<td>1,211 (61.44) ♠</td>
</tr>
<tr>
<td><strong>Sometimes True</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>397 (20.97)</td>
<td>35 (44.87) ♠</td>
<td>432 (21.92)</td>
</tr>
<tr>
<td><strong>Often True</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>303 (16.01) ◊</td>
<td>25 (32.05)</td>
<td>328 (16.64) ◊</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td>78 (100.00)</td>
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</table>

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<th>Skipped meals because not enough money</th>
<th>30.0337</th>
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<tr>
<td>1,304 (69.21) ♠</td>
<td>29 (39.19) ♠</td>
<td>1,333 (68.08) ♠</td>
</tr>
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<td><strong>Sometimes True</strong></td>
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<tr>
<td>383 (20.33)</td>
<td>28 (37.84)</td>
<td>411 (20.99)</td>
</tr>
<tr>
<td><strong>Often True</strong></td>
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<td></td>
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<tr>
<td>197 (10.46) ◊</td>
<td>17 (22.97) ◊</td>
<td>214 (10.99) ◊</td>
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<td><strong>Total</strong></td>
<td>1,884 (100.00)</td>
<td>74 (100.00)</td>
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<th>Ever hungry but didn't eat</th>
<th>9.0737</th>
<th>0.003</th>
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<tr>
<td>1,428 (75.72) ♠</td>
<td>48 (60.76) ♠</td>
<td>1,476 (75.11) ♠</td>
</tr>
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<td><strong>Yes</strong></td>
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<tr>
<td>458 (24.28) ◊</td>
<td>31 (39.24) ◊</td>
<td>489 (24.89) ◊</td>
</tr>
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<td><strong>Total</strong></td>
<td>1,886 (100.00)</td>
<td>79 (100.00)</td>
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</table>

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<tr>
<td>1,326 (70.12) ♠</td>
<td>30 (39.47) ♠</td>
<td>1,356 (68.94) ♠</td>
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<td><strong>Less than four times</strong></td>
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<td>465 (24.59)</td>
<td>29 (38.16)</td>
<td>494 (25.11)</td>
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<td><strong>Four times or more</strong></td>
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<tr>
<td>100 (5.29) ◊</td>
<td>17 (22.37) ◊</td>
<td>117 (5.95) ◊</td>
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<td><strong>Total</strong></td>
<td>1,891 (100.00)</td>
<td>76 (100.00)</td>
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<td></td>
<td>School Food Vouchers</td>
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<tr>
<td>No</td>
<td>1,341 (72.02) ♠</td>
<td>48 (66.67) ♠</td>
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<tr>
<td>Yes</td>
<td>521 (27.98) ◊</td>
<td>24 (33.33) ◊</td>
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<tr>
<td>Free Food from Religious or Voluntary Organisations</td>
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<tr>
<td>No</td>
<td>1,420 (76.47) ♠</td>
<td>39 (54.17) ♠</td>
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<tr>
<td>Yes</td>
<td>437 (23.53) ◊</td>
<td>33 (45.83) ◊</td>
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<td>Total</td>
<td>1,857 (100.00)</td>
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<td>Other Types of Community Support</td>
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<td>No</td>
<td>1,436 (77.83) ♠</td>
<td>44 (63.77) ♠</td>
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<tr>
<td>Yes</td>
<td>409 (22.17) ◊</td>
<td>25 (36.23) ◊</td>
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<tr>
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<td>1,845 (100.00)</td>
<td>69 (100.00)</td>
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Multivariable Analysis

In this section, I report on the OLR, which addresses the second hypothesis. I report: I. Living in TA and parental mental health, and II. Living Duration in TA and parental mental health.

I. Living in TA and Parental Mental Health

Correlation tests between parental mental health outcomes and other variables (APPENDIX.S5.3) determined the variables added to the adjusted OLR models. All significant variables from fitted Models 1-3 were added to Model 4 to find the best fit. Figures 5.5 and 5.6 are the OR plots showing the odds of more severe symptoms of self-reported depression and anxiety, respectively, with living in TA as the main exposure and predictor variable, given all the other variables were held constant in the model.

Depression

At baseline (unadjusted), the odds of more severe depressive symptoms were not significant. After adjusting (Model 4), the odds of more severe depression symptoms were 3.14 times significantly higher for parents/caregivers living in TA than for those in non-TA (Table 5.9). Model 4 was adjusted for the presence of dampness/mould, presence of vermin, noise from neighbours, shared kitchen facilities, NRPF status, place of birth, ethnicity, financial security, persons per household, food security (composite score), and use of school food vouchers (Table 5.9). The OR and 95% CI for each covariate are shown in Figure 5.5. and all p-values and VIFs are reported in APPENDIX.S5.4.

Table 5.9 OLR Models for Depression as the Outcome and Living in TA as the Exposure

<table>
<thead>
<tr>
<th>Odds Ratios</th>
<th>95% CI</th>
<th>Variables</th>
<th>Baseline OLR</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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<tbody>
<tr>
<td>Depression Rank PHQ-8</td>
<td>1.19</td>
<td>0.74 - 1.93</td>
<td>n=1,907</td>
<td>1.11</td>
<td>0.68 - 1.82</td>
<td>n=1,892</td>
<td>1.95**</td>
</tr>
<tr>
<td>Main Exposure: Living in TA (y/n)</td>
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</table>

*** p<0.001, ** p<0.01, * p<0.05

Model 1: Housing Environment - Living in TA, Electrical appliances in good working order (No), Dampness/Mould (Yes), Vermin (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), Number of Bedrooms

Model 2: Social-Demographic – Living in TA, NRPF status (Yes), Place of Birth (Non-UK-Born), Ethnicity, Gender (Female), Financial Security, Persons Per Household

Model 3: Food Security – Living in TA, Food Security Composite, School Food Vouchers (Yes), Other Types of Community Support (Yes)

Model 4: Models 1-3 (Significant Variables): Living in TA, Dampness/Mould (Yes), Vermin (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), NRPF status (Yes), Place of Birth (Non-UK-Born), Ethnicity, Financial Security, Food Security Composite, School Food Vouchers (Yes)
Anxiety
At baseline (unadjusted), the odds of more severe anxiety symptoms for parents/caregivers living in TA, were also not significant (Table 5.10). After adjusting (Model 4), the odds of more severe anxiety symptoms rank were 2.46 times significantly higher for parents/caregivers living in TA than for those in non-TA. Model 4 was adjusted for large electrical appliances in good working order, presence of dampness/mould, presence of vermin, noise from neighbours, shared kitchen facilities, number of bedrooms, place of birth, financial security, persons per household, food security (composite score), free food from religious/voluntary organisations, and other types of community support (Table 5.10). The OR and 95% CI for each covariate are shown in Figure 5.6. Cross-tabulations were also conducted by each variable that sparked inquiry: ethnicity, NRPF status, place of birth, and shared kitchen facilities (APPENDIX.S5.5).

Table 5.10 OLR Models for Anxiety as the Outcome and Living in TA as the Exposure

<table>
<thead>
<tr>
<th>Odds Ratios</th>
<th>Baseline OLR</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety Rank GAD-7</td>
<td>1.42</td>
<td>1.27</td>
<td>1.88*</td>
<td>1.06</td>
<td>2.46**</td>
</tr>
<tr>
<td>Living in TA (y/n)</td>
<td>0.85 – 2.37</td>
<td>0.76 – 2.13</td>
<td>1.03 – 3.42</td>
<td>0.60 – 1.90</td>
<td>1.27 – 4.75</td>
</tr>
<tr>
<td>n=1,918</td>
<td>n=1,904</td>
<td>n=1,841</td>
<td>n=1,821</td>
<td>n=1,775</td>
<td></td>
</tr>
</tbody>
</table>

* p<0.001, ** p<0.01, * p<0.05

Model 1: Housing Environment-Living in TA, Electrical appliances in good working order (Yes), Dampness/Mould (Yes), Vermin (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), Shared clothes and drying room (Yes), Number of Bedrooms.
Model 2: Socio-Demographics: Living in TA, Place of Birth (Non-UK/Born), Gender (Female), Financial Security, Persons Per Household
Model 3: Food Security: Living in TA, Food Security Composite, Free Food from Religious and Voluntary Organisations (Yes), Other Types of Community Support (Yes)
Model 4: Models 1-3 (Significant Variables): Living in TA, Electrical appliances in good working order (Yes), Dampness/Mould (Yes), Vermin (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), Number of Bedrooms, Place of Birth (Non-UK/Born), Financial Security, Persons Per Household, Food Security Composite, Free Food from Religious and Voluntary Organisations (Yes), Other Types of Community Support (Yes)
II. Living Duration in TA and Parental Mental Health

In the subset of families living in TA, there were no associations between living duration in TA as an ordinal variable and the outcome variables, except for depression, but as a binary variable, both anxiety and depression were significant. There were 64 complete cases of PHQ-8 and 66 of GAD-7 with self-reported living duration in TA. Tables 5.11 and 5.12 show the OLR baseline and the best-fit models. Figures 5.7 and 5.8 are the adjusted OR plot showing the odds of more severe depressive and anxiety symptoms, respectively, with living duration in TA (≥ or < 12 months) as the main exposure and predictor variable. Model 5 was the best fit of the models, but neither had duration in TA as a significant independent predictor of more severe mental health outcomes (Tables 5.11 and 5.12).

Depression

At baseline (unadjusted), the odds of more severe depressive symptoms (2.65x) were significant for parents/carers living in TA ≥ 12 months. After adjusting for the better-fit model, the odds of more severe depressive symptoms were 2.38 times higher for those parents living in TA ≥ 12 months compared to those < 12 months, however, this was not statistically insignificant (Table 5.11). Model 5 was adjusted for the presence of dampness/mould and food security (composite score).
The OR and 95% CI for each covariate were significant, as shown in Figure 5.7.

**Table 5.11. OLR Models for Depression as the Outcome and Living Duration in TA as the Exposure**

<table>
<thead>
<tr>
<th>Odds Ratios</th>
<th>Baseline OLR</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Rank PHQ-8</td>
<td>2.65*</td>
<td>47.06*</td>
<td>15.69*</td>
<td>14.56*</td>
<td>2.59</td>
<td>2.38</td>
</tr>
<tr>
<td>Main Exposure</td>
<td>1.08-8.48</td>
<td>1.87-1182.79</td>
<td>1.48-165.86</td>
<td>1.41-150.45</td>
<td>0.81-8.31</td>
<td>0.87-8.51</td>
</tr>
<tr>
<td>Living Duration in TA ≥ 12 months</td>
<td>n=68</td>
<td>n=27</td>
<td>n=27</td>
<td>n=27</td>
<td>n=57</td>
<td>n=64</td>
</tr>
</tbody>
</table>

*** p<0.001, ** p<0.01, * p<0.05

Note: All variables that had a significant correlation with the PHQ-8 and GAD-7 were added to Model 1 and then taken out to adjust for confounders.

Model 1: Living Duration in TA, Outdoor Space Safe (Yes), Dampness/Mould (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), Shared clothes and drying room (Yes), Number of Bedrooms, Financial Security, Persons Per Household, Food Security Composite

Model 2: Living Duration in TA, Outdoor Space Safe (Yes), Dampness/Mould (Yes), Shared clothes and drying room (Yes), Shared Kitchen Facilities (Yes), Financial Security, Food Security Composite

Model 3: Living Duration in TA, Outdoor Space Safe (Yes), Dampness/Mould (Yes), Shared clothes and drying room (Yes), Shared Kitchen Facilities (Yes), Financial Security, Food Security Composite

Model 4: Living Duration in TA, Dampness/Mould (Yes), Shared clothes and drying room (Yes), Food Security Composite

Model 5: Living Duration in TA, Dampness/Mould (Yes), Food Security Composite

**Figure 5.7. Model 5 OR Plot: Living in TA ≥ 12 months and Depression PHQ-8**

**Anxiety**

At baseline, the odds of more severe anxiety symptoms (2.55x) for parents/caregivers living in TA ≥ 12 months were not significant. After adjusting (Model 5), the odds of more severe anxiety symptoms were 1.72 times higher for those parents living in TA ≥ 12 months compared to those in TA < 12 months but were also not significant (p<0.05)(**Table 5.12**). Model 5 was adjusted for dampness/mould and noise from neighbours. **Figure 5.8** shows the OR and 95% CI for each covariate.
Table 5.12. OLR Models for Anxiety as the Outcome and Living Duration in TA as the Exposure

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratios 95% CI</th>
<th>Baseline OLR</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome: Anxiety Rank GAD-7</td>
<td>2.55</td>
<td>1.03-6.33</td>
<td>266</td>
<td>91.58*</td>
<td>0.86-13.27</td>
<td>0.74-6.96</td>
<td>2.27</td>
</tr>
<tr>
<td>Main Exposure: Living Duration in TA</td>
<td>1.32-6351.52</td>
<td>n=66</td>
<td>n=26</td>
<td>n=56</td>
<td>n=62</td>
<td>n=62</td>
<td>n=66</td>
</tr>
</tbody>
</table>

***p<0.001; **p<0.01; *p<0.05
Note: All variables that had a significant correlation with the PHQ-8 and GAD-7 were added to Model 1 and then taken out to adjust for confounders.
Model 1: Living Duration in TA, Outdoor Space Safe (Yes), Dampness/Mould (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), Number of Bedrooms, Financial Security, Persons Per Household, Food Security Composite
Model 2: Living Duration in TA, Dampness/Mould (Yes), Noise from Neighbours (Yes), Shared Kitchen Facilities (Yes), Number of Bedrooms, Financial Security, Persons Per Household, Food Security Composite
Model 3: Living Duration in TA, Dampness/Mould (Yes), Noise from Neighbours (Yes), Persons Per Household, Food Security Composite
Model 4: Living Duration in TA, Dampness/Mould (Yes), Noise from Neighbours (Yes), Persons Per Household, Food Security Composite
Model 5: Living Duration in TA, Dampness/Mould (Yes), Noise from Neighbours (Yes), Persons Per Household

5.4. Discussion

Using these methods, this was the first study in LBN and England exploring the impact of living in temporary accommodation due to homelessness for under 5s and their families during the COVID-19 pandemic on parental mental health and access to health services. To the best of my knowledge, it is one of few studies to quantitatively explore both barriers and facilitators to optimising health outcomes and accessing health care services for this population exclusively with a comparison group during any time period. Families living in TA were increasingly disadvantaged across multiple domains and childhood vulnerabilities compared to their counterparts living in non-TA. This demonstrated that living in TA was associated with various barriers related to socio-economic position, food insecurity, poor housing environments, and poor parental mental health. However, living
duration in TA didn’t have significant associations except for depression in the univariable analysis. Previous pre-pandemic evidence has shown that people experiencing homelessness often have poorer health outcomes and access to healthcare than the general population. This study showed antenatal services were less accessed by families in TA during the lockdown periods.

Frequent use of food banks and reliance on school food vouchers, free food from local religious and voluntary organisations, and other types of community support potentially indicated these were facilitators for families with U5TA and their families. The multivariable analysis showed that these barriers and/or facilitators are multi-faceted, as described in the overall thesis hypothesis. Each barrier and/or facilitator has its own relationship with poor parental mental health (a barrier), as found in Phases 1 and 4. It’s not just living in TA that is associated with poor mental health—many other factors are involved, as shown in the Chapter 2 concept map. The forest plots showed that TA couldn’t be seen in isolation from other variables—there is a comparative element, and certain model adjustments can change these relationships. This thesis aimed to understand barriers and facilitators better, and Phase 3 did that.

**Socio-Demographics: TA vs. Non-TA**

As anticipated, parents/caregivers in TA were more likely to be non-white British ethnicity, of lower economic status, non-UK born with a history of recent migration, single-parent households, younger and have NRPF status. This socio-demographic profile was consistent with previous health equity reports. Within families living in TA, high-risk profiles were captured by NRPF status to aid the local authority in targeting the most vulnerable in their future strategies. All participants living in TA with NRPF status also reported being unemployed, which may be expected for some participants by definition. However, this may not have described some informal, cash-in-hand jobs as discussed in Phase 4, or the different visa types with NRPF status which can have a maximum work allowance per week (e.g. 20 hours on Tier-4 visa). Among parents/caregivers living in TA, although there weren’t any specific trends regarding the severity of symptoms,
more than sixty percent experienced symptoms of depression and anxiety if they had been living in TA for more than a year.

Healthcare Access

Despite the limitations of the survey instruments used, valuable information can still be derived from these results. There was a high proportion of families living in TA who did not access any antenatal services or newbaby checks. Although a high proportion of all families did not access child health reviews, this warrants further investigation. Since all children 7-36 months old were included in the total access variable, there may have been some families with under 5s who were not due to access the service. Furthermore, if they had one child, it was not plausible for them to get an access score of 2, "high access", which could have distorted the results. However, the individual services demonstrate that there may be access issues for families living in TA and not living in TA.

For some immunisations (12- and 16-weeks), ~50% did not access the service. Similarly, more than 50% of all families did not access whooping cough vaccines, which are less dependent on the child's age. Therefore, these would be considered a priority service area when developing health strategies. In another mixed-methods study in England, parents/caregivers self-reported barriers to accessing routine childhood vaccinations during the pandemic, such as lack of clarity if services were operating as usual, difficulties scheduling appointments, and fear of safety issues while accessing the service. In other HICs like the US, the pandemic amplified health inequities among the most vulnerable, including decreases in routine well-child visits, developmental screening, routine vaccines, and dental services and delayed access to COVID-19 immunisations.

TA and Parental Mental Health

Living in TA was associated with worse self-reported mental health and was an independent predictor of poorer parental mental health outcomes when adjusted for measures of housing environment, food security and socio-economic position. In contrast, a longer duration of living in TA was not an independent predictor. The
relationship between homelessness and mental health is complex since it has been shown as a cause and consequence of homelessness, but cross-sectional data in this study cannot disentangle the reverse causality. Therefore, I didn’t know if the participant(s) were predisposed to poor mental health due to genetics, ACES or a combination of factors, including accessibility. These results shared trends with other research at the time that found an impact of COVID on mental health outcomes. However, these studies were more generalisable to the larger population but not specifically TA. In a cross-sectional study of rural mothers and children < 13 years experiencing homelessness (not specifically TA), barriers were lack of availability, accessibility, and acceptability of mental health care.

Families living in TA were found to have greater odds of poor parental mental health outcomes, which was further compounded by factors including NRPF status, financial insecurity, food insecurity, average household size and poor housing environments. These findings are similar to those from the partner study in Tower Hamlets. However, that study didn’t isolate their sample by housing type, so the impact of living in TA was not evaluated. Persons per household, which was part of the overcrowding measure, and poor housing environments were not surprising contributors as both were significant factors in The UK Longitudinal Study and English Household Survey involving the general population. Furthermore, prenatal exposure to air pollution and childhood housing insecurity has been shown to affect adolescent depression and hippocampal structure. Therefore, Phase 3 findings, such as dampness/mould, poor parental mental health, low access to antenatal services, etc., are even more significant for pregnant women and under 5s considering the multi-faceted component of these barriers and childhood vulnerabilities.

Some results seemed counterintuitive, such as the lower odds of severe depressive symptoms in participants living in households with shared kitchen facilities, where this would more typically imply household overcrowding in some cases and thus be associated with worse mental health. During the pandemic, when data were collected, mixing households was not permitted until
the “Rule of Six” was established in September 2020.\textsuperscript{360} Therefore, it was possible that sharing household facilities built resilience and/or a support system when there was less access to their usual social networks.\textsuperscript{360,361} Of note, it was impossible to know whether sharing kitchen facilities was amongst family and/or non-family members, which may have also been a positive or negative factor, i.e., multigenerational households.\textsuperscript{348} However, persons per household did have significant odds of depression and anxiety on the first OLR.

Compared to those of White ethnicity, most ethnic groups had lower odds of increased severity of parental mental health which has also been found in other studies\textsuperscript{362} including a partner study done in the city of Bradford.\textsuperscript{301} These mental health measures were self-reported; therefore, it is possible that this finding was due to linguistic/ cultural and social underreporting of mental health concerns in participants of non-white ethnicity. Given that, it was also unclear what social or cultural factors may have affected participants’ willingness to admit/recall certain symptoms or feelings they experienced during the pandemic.

Living in TA $\geq$ 12 months was not a significant independent predictor of worse parental mental health. These results were not surprising because of the heterogeneous quality of TA. It may be that some families living in TA $\geq$ 12 months had been in very suitable accommodation and not moved frequently. On the other hand, housing-environmental barriers such as dampness/mould, food insecurity and persons per household were predictors for more severe symptoms of depression and anxiety among families in TA. Since this OLR only included the families living in TA, this implies that some other barriers and facilitators can’t be seen in isolation from TA. It’s not just that these families live in TA or for how long, but what other variables exacerbate or mitigate the challenges to optimising health outcomes and accessing services. Parental mental health is a crucial variable impacting families with U5TA—this was a significant finding in \textbf{Phase 4} and discussed in \textbf{Chapter 6}. 
5.4.1 Strengths and Limitations

This study had various strengths, including using a dataset built upon the recruitment strategies and data collection methods during the rapid response period of the pandemic; therefore, the early days of the pandemic were more likely recalled. Using a cross-sector approach, the collaboration with the LBN local authority and non-profit sector, plus the bi-weekly reports I did, ensured that total recruitment numbers were met. This was especially the case for the families living in TA, who shared a likeness with the socio-demographics of LBN and families living in TA of LBN, when I intentionally reached out to organisations who worked with families in TA that I had previously worked with, including Shelter England and their LBN office. This study adds to the literature with further evidence that families with U5TA are more prone to childhood vulnerabilities than those not currently experiencing homelessness. As mentioned in previous chapters, families with U5TA have yet to be studied as an exclusive group with a comparison group in research using validated and standardised measures before this PhD. Therefore, this study helps fill that gap. Furthermore, a profile of high-risk families living in TA was established to better inform the LBN local authority on which areas to prioritise for families most in need.

This cross-sectional study had limitations intrinsic to all cross-sectional studies, such as the data only reflected one specific moment in time during the pandemic and not how things may have changed later (e.g., healthcare access) when there were no lockdown periods (i.e. no pre/post data). The comparison group (non-TA) was not representative of the rich, ethnic and social diversity of LBN since over 70% and 85% were White and married, respectively, compared to LBN's general population, who are White (30.8%) and married (40.8%). Therefore, the comparative analyses are unlikely to be generalisable to the LBN population. One of the many COVID impacts on the PhD was that I didn’t design this survey (e.g. questions asked, question format), limiting my investigation and changing my original objectives that were informed by Phase 1. For example, the survey questions were not tailored to the TA population, which was of upmost importance to this doctoral research. Depending on how the participant interpreted the
question-and-answer choices, TA could be defined in three ways, “temporary accommodation”, “squatting”, and “living rent free”. A standard definition of TA was not provided to participants, although two examples were listed. Therefore, I couldn’t control for that variable as I had done in Phases 2 and 4.

Many survey questions also relied on respondents’ interpretation of what constitutes “major repairs needed in the home” and “intersex”, in addition to the non-specificity of the healthcare access questions. The lack of examples or definitions may have broadened the outreach of the questions and affected the associations some variables had with living in TA or duration in TA, thereby making some of the findings difficult to interpret. I didn’t find the same stark difference between TA and non-TA in three of the four composite healthcare access variables. This may be explained by the non-specificity of the access questions and answer choices (i.e., lacked a “Not applicable” option) in addition to how I had to consider a wide age window when I separated the services by the age of the child. Therefore, Phase 3 findings should be interpreted cautiously, as there was also no way to distinguish whether the child did not access the service or didn’t need it. If there are drivers of health inequities involved, more information is needed. Likewise, this survey was based on self-reported measures or PROMS, so recall bias could be possible. There were some intuitive variables that were not collected which would have also provided important insight such as language. Language barriers often play a vital role in healthcare access and LBN has over a hundred spoken languages with many individuals with English as their second language. Furthermore, data on childhood injury, minor illness and developmental delay would have provided critical understanding about child health during the pandemic because these could influence the need to access certain health care services and how frequently. I had planned to collect these data in the two surveys I designed before and during the pandemic.

Commonly-used metrics for overcrowding could not be calculated because there was no data on the number of rooms per household (excluding bathrooms and kitchens) nor the gender of each household member. This unlikely made a
difference because so many overcrowding measures are heterogonous and contested.\textsuperscript{314,317} Respondents were only asked to report on the number of bedrooms, and therefore in calculating the PPB measure, I had to assume that other rooms, such as living rooms, if present, were not used for sleeping. In addition, there was a lot of missing data, especially for age which limited the analyses and implications of specific childhood vulnerabilities, thus the overall generalisability of the findings. Furthermore, with the age data that were reported, it wasn’t reliable for an accurate assessment of the number of under 5s per household which could impact the family, i.e., the more children, the more expenses inherent to that age group, e.g., nappies, therefore, the greater likelihood of financial strain. Likewise, many survey items had been taken from various places and not in their entirety, such as the USDA food security measure\textsuperscript{318} which I then had to adapt.

Despite the data and survey instrument limitations, I could still compare differences between families across four major childhood vulnerabilities and socio-demographics, which are political determinants of health inequalities.\textsuperscript{366} These study results can also be corroborated based on the findings from Phases 1-2 in previous thesis chapters. Another strength of this study was the approach to the analyses. OLR regression was used to show the odds of having more severe mental health symptoms rather than the more commonly used binary logistic regression, which would have only shown the odds of having or not having depression/anxiety. I conducted a CCA, which was a strength in its simplicity\textsuperscript{327} and didn’t introduce estimation bias since only complete cases were evaluated.\textsuperscript{367} A potential limitation was that certain cases were missing.\textsuperscript{327} However, only \textasciitilde 5\% of the total sample cases and \textasciitilde 20\% of TA cases were missing at baseline, which was considered acceptable according to the literature.\textsuperscript{367} MI is strongly suggested as the appropriate analysis method as the percentage of missing data increases (>50\%), although no formal guidelines exist.\textsuperscript{367} Furthermore, CCA is a valid approach when the exposure and/or confounders in the main analysis are missing not at random (MNAR), while MI may give biased estimates.\textsuperscript{332}
Another limitation was that I didn’t perform a mediation analysis because I later learned that OLR is not conducive for this type of analysis and potentially has less precision and underestimation of the standard error.\textsuperscript{368,369} I consulted two statisticians at UCL, including Professor Bianca De Stavola and was advised against doing a mediation analysis with the approach I had already taken (stepwise and OLR) because that involved writing a personalised version of \textit{gformula},\textsuperscript{370} which is difficult even for seasoned statisticians. I stand by the decision to use OLR because ordinal data can detect more nuanced associations. In contrast, binary logistic regression loses statistical power and essential information about the severity of depression and anxiety.\textsuperscript{328,371} A binary yes/no depressed/not depressed or anxious/not anxious variable would not capture the nuanced differences in severity of mental health symptoms between parents living in TA and those not, especially when some participants may not honestly report their symptoms. Therefore, it’s less helpful for tailoring mental health strategies and informing policy-making.

If I had conducted a structural equation modelling analysis, there would have been different insights by testing multiple hypotheses and relationships among various variables simultaneously. Despite this, the broad interpretation of the survey questions would have again limited the reliability of the findings, which would still need to be interpreted cautiously. I was trying to simplify my analysis to either accept/reject the hypotheses, especially since many complex factors contribute to family homelessness,\textsuperscript{96} some of which there were no variables for in the survey dataset. Since I was using ordinal outcomes, I also did not consider structural equation modelling because it would not have been an appropriate approach for performing mediation analysis. Structural equation modelling estimates models for the mediators and the outcome, and then combines the relevant parameters. However, this would only be valid when the outcome and all mediators can be modelled using linear regression.\textsuperscript{372} Alternatively, in this case, I could have adopted a casual inference approach as described by VanderWeele (2015).\textsuperscript{372} Even so, this would not be a simple approach and would require careful
consideration of potential confounders for all the relationships involved in estimation (e.g. exposure- mediator, mediator-outcome, and exposure-outcome) and of the causal contrasts of interest. All of the above would have become even more complex when dealing with multiple mediators and studying multi-casual pathways. In addition, there would also be a high likelihood of omitting important variables in structural equation modelling, which may have adverse effects on parameter estimates (i.e., coefficients), standard errors, and more.\textsuperscript{329} To the best of my knowledge, there is no easily accessible software to perform causal mediation analysis for ordinal outcomes and non-continuous mediators. Ultimately, there are pros and cons to each analytic method, but one must decide which is most appropriate for how the results will be used.

5.4.2 Implications

These results are supported by previous studies that the housing environment is a predictor of morbidity\textsuperscript{373,374} i.e. self-reported parental mental health, in this case. There is an urgent need to minimise the potential lifelong health impacts of these socio-political determinants of health experienced by families with U5TA and their families, a vulnerable group, in addition to tackling the immediate risks arising from issues such as digital exclusion and poor housing conditions. Although there is no way to know for certain, these issues may have been exacerbated during the pandemic as many families were in unusual living arrangements and surveyed during lockdown periods. Thereby, indicating that some families with U5TA and their families were exposed to these conditions during the pandemic, which had short-term and long-term consequences, even if conditions for some may have improved later.

A better surveillance strategy, including data collection, on how long families spend living in TA is vital since TA is meant for short durations; however, 35.44\% of the sample reported living in TA for ≥ 2 years, followed by 24.05\% with a living duration of 12 months to 2 years to date. This was consistent with the February 2023 data (Chapter 2) demonstrating that 36.8\% of families in LBN had a duration of tenure for ≥ 2 years in TA provided by the housing department. Therefore, it is
crucial to investigate why families are spending longer in TA and the type of TA, including its condition. This data may indicate potential negative outcomes from the time families spend in TA and assist with early prevention strategies. Such data have already been disseminated to the LBN local authority to provide recommendations to minimise risk and possible damages caused by these unsuitable living environments (Chapter 7).

Families living in TA had greater odds of poor parental mental health outcomes, which could have been worsened by additional childhood vulnerabilities which were statistically significant. Marco-level determinants are recognised for affecting parental capacity. Poor parental mental health is an ACE directly impacting both the health and wellbeing of the parent and child throughout the life course. Through collaboration with the community, religious and voluntary organisations, local authorities should target and provide extra support and provisions for families at higher risk with these characteristics e.g. worse parental mental health, food and financial insecurity, NRPF status. Tailored community-based mental health strategies are vitally needed, including co-location of mental health and housing support within settings already accessed by families with U5TA and their families. This study utilised the London Borough of Newham as an exemplar for exploring these inequalities and inequities, but the results and implications likely extend beyond Newham and need to be addressed on the national level as proposed in the Levelling Up White Paper.

5.5. Chapter Summary

- During the COVID-19 pandemic, living in TA was associated with many childhood vulnerabilities and barriers to optimising health outcomes for families with U5TA. However, living duration only had a statistically significant association with depression (p<0.05).
- Families living in TA were increasingly disadvantaged across multiple domains and childhood vulnerabilities compared to families in non-TA during the COVID-19 pandemic, which included socio-economic position, food
insecurity, poor housing environments, poor healthcare access, and poor parental mental health outcomes.

- However, families in TA made greater use of facilitators (e.g., community support, food banks).
- As hypothesised, families living in TA had greater odds of poor parental mental health outcomes, which was compounded by other factors including NRPF status, financial insecurity, food insecurity and poor housing environments. However, a greater duration of tenure living in TA was not an independent predictor of poor parental mental health.

- **Phase 3 findings (Chapter 5)** were consistent with the results previously found in **Phases 1-2 (Chapters 3-4)**.
Chapter 6
Phase 4. Professionals Study

6.1 Overview

Phases 1-3 provided evidence from the community level and individual/family level to address the PhD aim and ROs 1-3 through a systematic scoping review, citizen science study and quantitative study, respectively. Phase 4 explored the barriers and facilitators to healthy outcomes identified in Phases 1-3 through interviews with key professionals at the community and systems levels.

To corroborate findings in Phases 1-3, in this chapter, I addressed RO4 to qualitatively explore:

1) What do key professionals perceive as the main barriers and facilitators for U5TA in accessing healthcare and optimising health outcomes?
2) What barriers and facilitators do key professionals themselves experience when providing services to the U5TA population?

There were two sub-objectives, to explore:

I. How has the COVID-19 pandemic impacted the U5TA families and the services the professionals provide?
II. What policy recommendations do professionals have for addressing these barriers such as co-production and reverse innovation?

6.2 Background

Few qualitative studies have been conducted to examine the provider perspective in the field of family homelessness. Findings from these studies have shown numerous service-provider barriers such as inadequate medical education and training around inclusion heath and trauma-informed approaches, poor consultation style, practice factors (e.g. workload/time), patients with multiple co-morbidities and high risk of noncompliance, and policies that hinder the provision of primary care services and social services communication thereby preventing access.\textsuperscript{21,377,378} However, these studies did not discuss U5TA specifically nor utilise a cross-sector approach (i.e., beyond health providers), including all domains of
access (e.g., affordability, accessibility, availability, accommodation and acceptability). 21,22,115

6.3 Methods
6.3.1 Study Design
One-to-one semi-structured interviews and short six-item demographic questionnaires were used. Semi-structured interviews were chosen as the primary data collection method due to the exploratory nature of the research questions and as the most frequently used source of qualitative data collection in health services research. These interviews are focused, yet flexible and can be guided by the participant’s responses in comparison to 1) structured and 2) narrative interviews, which are a) sequential with a defined question order and b) broadly open-ended and enables participants to tell their story without interruption, respectively. 156,379 Semi-structured interviews were also considered most appropriate because they allowed for in-depth exploration of key professionals’ thoughts and experiences in an iterative way. While this method has a flexible approach, it also uses an interview guide with probes, follow-up questions and/or comments to guide the conversation. 156,379 In addition, interviews facilitated covering a larger number of questions in more detail than what was possible in the group meetings in Phase 2. The interviews were also logistically easier to arrange, considering the professionals’ different schedules and high demand during the pandemic. I chose to conduct interviews on a videoconference platform Zoom 380 to adapt to new challenges introduced by physical distancing mandates or lockdowns during the pandemic. Virtual interviews were also convenient and accessible for professionals working from home. Conducting interviews in this way has been shown to be effective, 381 and studies have shown high satisfaction with this platform among health professionals for research purposes. 21,382

A codebook approach was chosen to analyse the data. 21,383 Codebook approaches are a family of approaches that combine the qualitative research values of thematic analysis with a more structured approach to coding and theme development, which "...is embedded within the philosophical standpoint of critical realism and
pragmatism...(p.2),” adding richness to the methodology. A thematic codebook index approach, as described by Nowell et al., 2017 was chosen to analyse the qualitative data to ensure rigour and replicability(detailed below). In addition, framework analysis, developed by Ritchie et al., 2002 was integrated into this approach to provide an organised structure or matrix to search for the presence or absence of themes. More specifically, matrices were used to conduct within-case analysis of each participant to explore summaries of each participant’s view or between-case analysis to explore a specific theme across the various participants groups. These approaches were used because both allow for a combination of inductive and deductive coding, including theory-driven and data-driven.

**Topic guide**

I developed an interview topic guide (APPENDIX.S6.2) based on findings from Phases 1-3. The draft topic guide was reviewed and commented on by Dr. Celine Lewis(CL), an experienced qualitative researcher, followed by the rest of the supervisory team.

The topic guide covered the following areas: professionals were asked to 1) define homelessness personally and professionally; 2) describe if they or their service experience any challenges when working with the U5TA population; 3) put themselves in the U5TA families’ shoes and describe what they thought were the greatest challenges to accessing health services and optimising health outcomes; 4) explain the impact of the pandemic on families and their services; and 5) provide recommendations(e.g. policies, co-production) to address any of the challenges discussed. The first few interviews (1 per professional group) acted as pilots, after which the interview guide wording was refined, and the order of questions was revised. A question on reverse innovation as a potential strategy to mitigate some of the barriers faced by families and professionals was added after the second interview. (APPENDIX.S6.2) This question was added upon further reflection on the current literature and examples provided by professionals that potentially fit under that strategy [inductive reasoning]. This prompted the next
interviewees to provide their own examples from their professional experience or knowledge.

6.3.2 Participants
In order to achieve maximum variation in the sample, a broad range of professionals who work with U5TA and their families were invited to interview. The inclusion and exclusion criteria were as follows:

Inclusion Criteria:
- Professional who is currently working and/or has worked with U5TA and their families either directly or indirectly, i.e., doesn’t interact with families but is still responsible for them (e.g., someone in the local authority or higher-up administration in a non-profit, services, management, etc.).
- Currently working in the London Borough of Newham (LBN) at the time of the interview.
- Come from one of the following professional groups: Health Visitor (HV), Health Professional (HP), Non-profit Organisation (NP), and the Local Authority of LBN (LA).
- Professionals could be from any department, specialities, and/or field as long as they met the other criteria.

Exclusion Criteria:
- Professional who has not worked with U5TA and their families in any capacity.
- Not currently working in LBN.

Recruitment and Data Collection
Potential participants were purposively sampled based on likeliness to answer the research questions and having a variety of experiences due to differences in backgrounds: HV, HP, NP and LA. HVs were given their own category separate from HPs because HVs provide a unique universal health service, where they actually go into families’ homes and other community sites. Professionals were recruited from October 2020 to December 2021 using snowball sampling [i.e.,
referrals\textsuperscript{22,390} in LBN through the health visiting services, voluntary organisations, East London NHS Foundation Trust and LBN Public Health Team. I initially compiled a list of potential interviewees or contacts who could recommend eligible participants. The supervisory team also provided additional contacts through their professional networks. Potential participants were emailed and sent a participant information sheet which explained the purpose of the study, research ethics, and further details on the interview (e.g., time duration; conducted online). If interested, potential participants were asked to reply via email with any questions they had about the study and/or to schedule the interview. A total of 61 professionals were contacted, excluding those who distributed participant information sheets through their networks. Two follow-up emails were sent at 3–4-week intervals. Twenty responses of interest were received. Of the twenty professionals who initially indicated their interest in participating, 3 were HV and unreachable after receiving the consent form (\textit{APPENDIX.S6.1}) and attempting to schedule the interview. Professionals were recruited from other areas of East London. However, the inclusion criteria was later restricted to only professionals currently working in LBN because the Champions project\textsuperscript{20} was funded after the study began, and to keep everything within LBN. Written informed consent was obtained prior to the interview or verbally at the start of the interview. The process of recruitment, interviews and data analysis continued until thematic saturation was reached and no new codes emerged,\textsuperscript{391} which was judged at 14\textsuperscript{th}–16\textsuperscript{th} interviews.\textsuperscript{392}

6.3.3 Data Analysis

Interviews were digitally recorded with audio transcription, which were then cross-checked for accuracy and corrected where necessary. All interviews were anonymised and given codes e.g., HV1.

Data were analysed using the following the steps:

1. The transcripts were read multiple times (data familiarisation);
2. An initial codebook was drafted [version 1] using a priori deductive codes (from theory i.e., concept map [Chapter 2; Figure 6.1], the topic guide, research question, results of Phases 1-3),\textsuperscript{9,13,15,17,22–25,393} and inductive codes (from the data familiarisation);
3. Version 1 of the codebook was applied to a subset of interviews \((n=4)\), and further codes derived from the data were added at this stage. CL and I then used this codebook and coded one of the transcripts together to support my learning in the coding process. Some modifications to the codebook were made at this stage \((v2)\).

4. The codes in the v2 codebook were labelled and defined by a description, inclusion and/or exclusion criteria, and origin with an example quotation.\(^{387}\)

5. To support rigour and replicability, a further three interviews were co-coded by CL and me independently to test the reliability of codes, using the MS Word comment boxes. After each transcript had been coded, CL and I met to compare the portions of coded text; any differences in coding were discussed until consensus was reached. This process was conducted twice resulting in codebook versions 3 and 4. There were fewer differences in coding as each process was conducted. A final transcript was then coded independently by both CL and me using the v4 codebook. A high level of agreement was reached with using this codebook.

6. All interviews were then coded with the final version [version 4, APPENDIX.S6.3] of the codebook in NVivo(v.12) software.\(^{270}\) Six new codes were added to the codebook at this stage.\(^{383}\) When a new code was added to the codebook, the previously coded transcripts were re-coded with this amended codebook (Table 6.1: green numbers; APPENDIX.S6.4) to ensure consistent coding. No new codes were added after interview 15 \((n=15/16)\), which suggested code saturation had been reached.\(^{383}\)

7. Once the dataset had been coded, the data coded in each code were compared and contrasted to check that the underlying construct of the text was the same. Through this process, one code was merged with another; a note was added to v.4 labelled “constant comparison” with the merged codes highlighted: language and cultural barrier and lack of knowledge of child protection systems.

8. The data were then ‘charted’ whereby data, i.e., coded quotations, were rearranged into three separate charts for each of the thematic headings of interest, i.e., individual/family, community, and systems level. Each chart
was indexed with the professional groups on the X-axis\textsuperscript{386,388} and sub-themes on the Y-axis using the matrices function on NVivo.\textsuperscript{22} An example of one of the matrices is provided (APPENDIX S6.5).

9. Next, a summary table was developed detailing the frequency, including the presence or absence of a code as it applied to a professional group (APPENDIX S6.6).

10. In the final stage of analysis, subheadings were reviewed and any which shared similar characteristics were pulled together to provide overarching theme headings. For example, the sub-themes \textit{Immigration Issues} and \textit{Financial Security} were merged to create one sub-theme called Immigration and Financial Insecurity.

Results were written up after detailing the final themes and sub-themes with explanatory quotes embedded within the text.

6.4 Results
Eighteen deductive codes were developed based on the results of \textbf{Phases 1-3}. A further 39 inductive codes (Table 6.1) emerged during the analysis of transcripts. \textbf{Table 6.1} shows the number of the new codes that became apparent per transcript. The majority of new codes were established during interviews 1-6, following fewer new codes.
6.4.1 Professional Characteristics
Seventeen interviews were conducted in total however, one was later excluded (Interview 4) as it did not meet the inclusion criteria because the professional was not currently working in LBN, which left 16 for final analysis (26.2% recruitment rate). Interviews lasted between 14 and 41 minutes (Med= 28 minutes; range= 14-41 minutes)(APPENDIX S6.7). Professionals included 7 Health Visitors [HV], 4 Health Professionals [HP] including a General Practitioner (GP), therapist, dietician, nurse, 2 Non-Profits [NP], and 3 Local Authority [LA](e.g., Public Health consultant, social workers). At the time of the interview, professionals had worked in their current position anywhere from three months up to 21 years (Med= 2.0; SD= 5.1). All professionals were currently working in LBN, but reportedly worked in other boroughs, especially the HVs.22 Table 6.2 shows the professional characteristics.
Table 6.2. Professional Characteristics

<table>
<thead>
<tr>
<th>Professional Group</th>
<th>Number of Professionals n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Visitors</td>
<td>7 (44)</td>
</tr>
<tr>
<td>Health Professionals</td>
<td>4 (25)</td>
</tr>
<tr>
<td>Non-profit Sector</td>
<td>2 (13)</td>
</tr>
<tr>
<td>Local Authority</td>
<td>3 (19)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-29</td>
<td>3 (19)</td>
</tr>
<tr>
<td>30-34</td>
<td>1 (6)</td>
</tr>
<tr>
<td>35-39</td>
<td>1 (6)</td>
</tr>
<tr>
<td>40-44</td>
<td>2 (13)</td>
</tr>
<tr>
<td>45-49</td>
<td>4 (25)</td>
</tr>
<tr>
<td>50-54</td>
<td>3 (19)</td>
</tr>
<tr>
<td>55-59</td>
<td>1 (6)</td>
</tr>
<tr>
<td>60-64</td>
<td>1 (6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2 (13)</td>
</tr>
<tr>
<td>Female</td>
<td>14 (88)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnic Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>White (British and/or Any other White British background)</td>
</tr>
<tr>
<td>Black (African or Caribbean)</td>
</tr>
<tr>
<td>Asian or Asian British: Bangladeshi</td>
</tr>
<tr>
<td>Mixed Ethnic background</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How Long Professionals have been in Current Role (Time Spans)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;= 6 months</td>
<td>3 (19)</td>
</tr>
<tr>
<td>7 month - 1 year</td>
<td>2 (13)</td>
</tr>
<tr>
<td>1.1- 2.5 years</td>
<td>5 (31)</td>
</tr>
<tr>
<td>2.6- 5 years</td>
<td>1 (6)</td>
</tr>
<tr>
<td>5.1 -10 years</td>
<td>4 (25)</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>1 (6)</td>
</tr>
<tr>
<td>Total</td>
<td><strong>16 (100%)</strong></td>
</tr>
</tbody>
</table>

Note: Percentages are rounded to the nearest whole number, so percentages may not add up to exactly 100%.

6.4.2 Role Types and Services Provided
Each professional described the broad spectrum of services they provided in their roles from frontline workers to research. In the local authority, for example, LA3 referred to her role as “quite broad” since it “…covers mental health, housing, and employment support.” Another professional specified liaising with the Home Office on behalf of families regarding their immigration status (e.g., someone who may have overstayed visa and is now homeless) and with Housing, General Practitioners (GP) and schools to support families with no recourse to public funds.
(NRPF) as they regulate their status in the UK. Four HVs were specialist health visitors working with children with special educational needs and/or disability (SEND). HVs described a variety of roles and different services including needs and development assessment, toilet training, and family support. NPs said their roles were “…to support these families and by advising on advising them on their housing options and ensuring that we assist to challenge bad housing.”(NP2)

6.4.3 Definitions of Homelessness
Professionals were asked to provide their personal and professional definitions of homelessness (Table 6.3). Notably, the personal definitions provided tended to be more general than the official definitions with common keywords like “not safe,” “housing insecurity,” or “sleeping on the streets” (i.e., rough sleeping). Professional definitions were more specific and reflected their profession plus their own experiences:

“So I cover it in terms of thinking about people who are rough sleeping people, who are statutory homeless, so that more falls into people who identified as needing to be housed in some kind of whether it’s bed and breakfast or longer-term temporary accommodation or nightly-paid accommodation… I also think about the sort of more hidden homeless populations, which is like the sofa surfing that people who aren’t necessarily being identified or counted by services. I’d also think about it in terms of migrant health too, so people who are seeking asylum, who might be in certain types of accommodation, where they are without a stable, a common stable home.”(LA3)

Some professionals stated there was no difference between their current personal and professional definitions; in contrast, other professionals discussed how their prior personal and professional views were similar to the public perception of visible rough sleeping, but their current definition had changed over time through their work experience:

“I think what I would always have thought of somebody on the streets and with absolutely nowhere to go, but actually from my work, you know homelessness isn’t just that. Temporary accommodation is kind of a form of homelessness and it’s a lot broader than I thought initially, maybe [than] lots of people think… it can happen to lots of people for many different reasons.”(HP3)

Definitions of homelessness also varied by professional group. HVs were much more specific than other groups and provided visual examples such as “there’s nowhere to cook for the child” [n=4; HV3, HV5, HV7, HP4, LA3] and sharing bathrooms, perhaps reflecting their role as frontline workers who physically go to
the TA environment. HVs particularly emphasised the problem of having no fixed address and transientness of U5TA families in addition to how long families spend living in TA (although this was also mentioned by other groups):

“And from the work I do, I've seen situations where families are put in a temporary accommodation, and it lasts forever. It's more than two, three years in a TA even though it should be [a] short, short intervention for people have housing problems, then it goes on indefinitely.” (HV2)

Compared to HVs, NPs were more policy-focused by referencing the Housing and Homeless Reduction Acts:

“...it's bit more difficult in terms of proving someone's homelessness. But obviously, someone that is sofa surfing with someone, but can't actually stay there would be deemed as homeless and also and obviously people living in temporary accommodation. I would class and are classed as homeless. And the same as quite often if clients in living in situations where it's just not suitable, not reasonable for them to continue living where they are living. So it could be like really bad disrepair or Sort of harassment from the landlord, that type of thing.” (NP1)

All LAs’ definitions were distinct from each other; two were very technical and policy-based. Professionals articulated that homelessness has a “huge definition” (HP2) and “broad spectrum” (LA3), and that many individuals are experiencing the invisible types of homelessness.
<table>
<thead>
<tr>
<th>Definition</th>
<th>Health Visitor</th>
<th>Health Professional</th>
<th>Non-Profit Sector</th>
<th>Local Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professional</strong></td>
<td>&quot;...That's like a temporary accommodation And from the work I do, I've seen situations where families are put in a temporary accommodation and it last forever. It's more than two, three years in a TA even though it should be short-short-like intervention for people having housing problems, [but] then goes on indefinitely.&quot; (HV2)</td>
<td>&quot;Well, certainly for us that definition changes depending on what aspects of healthcare we're looking at really. So sometimes we'll just use the rough sleeping definition, sometimes we use the whole kit and caboodle. And now, obviously there's a huge overlap between people who are perfectly well housed and all the health conditions that we see in the homeless population as well, so it's the whole thing is extremely vague.&quot; (HP2)</td>
<td>* So I think, I mean professionally quite like it's bit more difficult in terms of proving someone's homelessness. But obviously, someone that is sofa surfing with someone, but can't actually stay there would be deemed as homeless and also, obviously people living in temporary accommodation I would class and are classed as homeless. And the same as quite often if clients in living in situations where it's just not suitable to live...not reasonable for them to continue living where they are living. So it could be like really bad disrepair or sort of harassment from the landlord, that type of thing&quot; (NP1)</td>
<td>*So professionally I think, homelessness, it covers quite a broad spectrum in terms of thinking about people who are rough sleeping people who are statutory homeless, so that more falls into people who identified as needing to be housed in some kind of whether it's bed and breakfast or longer-term temporary accommodation or nightly paid accommodation, well that's like bed and breakfast. And I also think about the sort of more the hidden homeless populations which is like the sofa surfing that people who aren't necessarily being identified or counted by services. I'd also think about it in terms of migrant health too, so people who are seeking asylum, who might be in certain types of accommodation, where they are, yeah they are without a stable, a common stable home.&quot; (LA3)</td>
</tr>
<tr>
<td><strong>Personal</strong></td>
<td>&quot;Homelessness hmm. For me, homelessness is not just about that family not having a roof over their head. Homelessness, well is for family that's sometimes sofa surfing. Some families...they're in one room and they've got three and four children. And sometimes the environment in which [the] is family, it just makes you kind of think how would you support them, really, you know. Yeah in a nutshell, yes homelessness—it's not just about not having a roof over your head, but that's the main thing. Homelessness is about living in accommodation where some families they've lived in for years. And, in a sense that they cannot plan their life...but [are] unable to do it. They cannot adapt appropriately and sometimes that's all it takes. But their hands are tied, so some families they've got all their stuff in boxes just waiting...they live in a hotel. You can say that they don't like [what] they've got to to some extent. But to me that's homelessness in the sense that they are unable to cook their proper food like some families that go there have kind of traditional food they're unable to cook them...they are so restricted sharing bathrooms those kind of things and it's causing a lot of emotional, you know, distress for families.&quot; (HV7)</td>
<td>&quot;Oh God, well I don't know. It's a very vague definition, but it's goes, all the way from I suppose rough sleeping at one end to just temporary barely crap housing contracts with an unregistered landlord and kind of everything in between. So yeah I mean it's a huge huge definition. I would say, and again it's sort of your definition well.&quot; (HP2)</td>
<td>&quot;A stable place to sleep or to be somewhere that somebody can feel safe. ...somewhere [some] way that somebody can feel warm and secure.&quot;(referring to what a individual experiencing homelessness lacks) (NP2)</td>
<td>&quot;Personally, again it, it's sort of, it's a double edged sword, so it's the same thing...not feeling settled. Not feeling that you can plant any roots. A stable environment that you can actually say that is yours, even if it's temporary accommodation, it's still yours. 'cause you're the the tenant in that property.&quot; (LA1)</td>
</tr>
</tbody>
</table>
6.4.4 Barriers and Facilitators

Barriers and facilitators experienced by professionals and their perception of those experienced by U5TA families were organised using the thematic headings taken from the conceptual model shown in Chapter 2, namely individual/family, community, and systems levels (Figure 6.1). Within these three headings, data were broken down into meaningful subheadings (e.g., mental health, cultural influences), which facilitated comparison across the various key professionals. Many of the barriers and facilitators discussed by participants existed before the pandemic. Others were exacerbated by (barriers) or were in response to (facilitators) the pandemic. These are described below, alongside quotes to support findings across each level.
Figure 6.1. Barriers and facilitators to health care access and optimal health outcomes

**Barriers**
- Policies
- Housing availability
- Digital inaccessibility
- Virtual appointments
- Lack of outreach models
- GP Registration, service closure & high demand
- Continuity of care and transientness
- Overcrowding and shared facilities
- Lack of stimulation and outdoor space
- Pests and vermin
- Safety and suitability
- Lack of social support
- Dampness and mould
- Loss of community presence
- Cultural differences and influences
- Language and interpreter challenges
- Mistrust
- Immigration status
- Financial insecurity
- Poor mental health

**Facilitators**
- Professionals wrote letters to challenge bad housing
- Professionals helped fill in health registration forms
- Referrals to food banks, charities, children’s centres, and housing support via Shelter
- Leniency about missed appointments
- Online therapy videos for families that could access them
- Teamwork among professional groups to get housing for priority need families
- Charities, children’s centres, and community centres as safe places
- Professionals’ adaptation of dietary advice
- Professionals, charities and LBN parents helping with sleep support
- Interpreter service
- Trust and communication skills
Individual/Family Level

On the individual/family level, professionals identified several barriers for U5TA families in optimising health outcomes and accessing health care. Many of these barriers also mirrored their own challenges in providing services to this population. The most frequently cited barrier was poor mental health, followed by language, cultural influences, immigration status, financial insecurity, and lack of trust in health services. In contrast, professionals only mentioned a few facilitators, including good communication skills and building trusting relations.  

I. Poor Mental Health

Most interviewees, including those across all four professional groups, discussed parental mental health as a barrier to U5TA achieving healthy outcomes. These issues included anxiety, depression, stress and uncertainty due to their transient circumstances. HV2 discussed how poor parental mental health flows downstream, starting from the insecurity and unsuitability of the TA to the parent’s mental health, which then impacts the child.  

“...Well, [parents] cannot look after their children. So definitely, it’s like, it flows down, you know, so that is, I mean, that social effects is no good for the children that we work with. I think things that might make it easier for families to engage, you [know], to have good accommodation that is number one. If you have a roof over your head, if you are comfortable, if your mind is settled, definitely, we have better health outcomes for these families, but because you know they are depressed, a lot of anxiety...” (HV2)

Multiple HVs and some HPs commented on how poor parental mental health affects positive parenting and, subsequently, child health and development. HP3 discussed appointment availability and how long waiting lists for speech and language therapy (i.e., 6 months-2 years) caused parents to feel helpless that they are unable to get the care they need for their children during the most critical development period. Professionals echoed a similar sentiment of helplessness when they saw that U5TA families had so many competing priorities, which prevented them from uptake of health services or following through with prescribed recommendations.  

“...then it stops them accessing everything you know. They’re so concerned about their housing. That then just it ripples out from there, just affects everything, so it really kind of almost makes me a bit redundant, because I can’t help.” (HP4)
HP4 put herself in their shoes and said how she wanted to “wave a magic wand and make it all better” when a mother broke down in tears in front of her.22

II. Language and Interpreter Challenges
All professional groups discussed that U5TA families face bi-directional language and cultural barriers. These included interpreters not being provided at GP surgeries or on automated calls, and immunisation information not being readily available in their language and/or a culturally acceptable format. This resulted in families reportedly accessing Accident and Emergency departmental services (A&E) out of convenience for routine clinical care or when a health issue became more severe because the parent was unable to communicate their children’s needs at the GP surgery.22 Professionals highlighted the lack of interpreters provided through their service based their own experience and families’ experiences. Some were notably surprised given that LBN has more than 100 spoken languages and rich ethnic diversity, but described it as “just another layer of struggle”(HP4) for U5TA families, noting that many important health websites lacked translations of registration, immunisation information and more for ESL/non-English speakers22:

“So much information on the NHS website, they are like in British English. So, for people that do not have English as their first language, then it’s a big barrier because they don’t understand what you’re saying. Our areas as identified, you know, like a language barrier [in] homelessness is a key, key issue.”(HV2)

HVs and NPs had their own challenges communicating with families. HVs reported the difficulties and “extra” pressures of arranging interpreters for U5TA families whose first language was not English and the time spent “…trying to kind of be able to communicate with families to find out what support they required and how we can support them best(HV7).”22

Language barriers were mitigated when professionals utilised an interpreter service when available called The Language Shop to accommodate families:

“I think, I think they’re all [language, cultural differences] definitely barriers, but I think that we always try to sort of think of ways around them, like we always have access to language line. So, we always have interpreters that we can use over the phone, which makes a really big difference.”(NP1)
Therefore, to be clear, this didn’t mean that were zero interpreters in LBN but rather problems accessing an interpreter to access the health service efficiently.  

III. Cultural Differences and Influences
Professionals also felt that cultural barriers also impacted the uptake of immunisations. HV3 gave an example of Muslim parents not wanting to immunise their children if the ingredients in the vaccine contained pork or gelatine. HPs often neglected to communicate the alternatives (possibly due to language barriers), which resulted in mistrust between parents and HPs. Other cultural barriers included ‘culture shock;’ for example, LA1 described a client who was moved from LBN, London to Essex and felt like “an alien” leading to feelings of isolation and unsettledness, which was interrelated with the community-level barriers:

“...[One] Mum said to me today she said ‘I went to the local shops’ because she was looking for some shops to buy her own cultural fruit because she’s African, and she said ‘I couldn’t find those shops.’ She says she ‘feels like an alien down the street’ because she’s not... seeing the people that resembles her ethnicity and so yeah, I understand what she means about the alien analogy.” (LA1)

All professional groups, except LAs, described cultural barriers that they experience when working with U5TA and their families. One theme that emerged was how the advice provided by professionals might conflict with cultural practices, for example, around the use of pillows for a newborn baby, as described by one of the health visitors:

“For instance, you might tell them that for a newborn child, they don't need to put them on a pillow or something, but in terms of some of the culture, they prefer to put the babies on the pillow to [give] support. They feel that otherwise, their head is not going to be the way they want it. They want the baby to lie still in one place and all that. So those are some things, and if you don't understand the culture, they might see it as you're being disrespectful or something.” (HV5)

This HV also had concerns about whether health information was conveyed appropriately by interpreters, particularly if the interpreter came from the same background and culture as the family:

“...sometimes language barrier also makes it very difficult to give them the information that you feel that they need, because sometimes you might even go [through an] interpreter but then again sometimes the interpreter might be bias, because they are the same like this. They speak the same language so sometimes what you're telling them [and] because you don't know what they say to them.” (HV5)
It was not uncommon that families challenged professionals on their advice when it wasn’t the cultural norm, especially among multi-generational households where different family members are making the health care decisions. Professionals were aware of cultural sensitivity because any disagreement could be seen as a sign of disrespect.

“In some families where they live in the hierarchical setup, the in-laws or the grandparents have a real influence on child rearing and development. So, in terms of seeking or adopting public health advice around weaning, for example, health, nutrition that [are] influenced by the practices of maybe the mother-in-law, that sister-in-law or the grandparents in terms of how a new mom would feed. So, you’ve got that conflicting advice and you’ve also got some of its own things around cultural practices of what they did, culturally, which, as far as they're concerned, ‘Well when I looked after you, you grew up fine. You’re fine...’”(HV3)

Some specialist HVs also discussed these barriers relating to the child’s diagnosis where parents may be reluctant to accept the child’s diagnosis, especially those involving disability. Another barrier cited was families’ lack of knowledge of child protection systems (i.e., social care, policies) and how they work even with the aid of an interpreter because “…it’s not within the normal culture, the normal understanding(HV1).”

IV. Immigration Status and Financial Insecurity

HVs, HPs and LAs discussed immigration status as a perceived barrier to accessing health services. HV6 pointed out that immigrant families may not understand how to access services or how the UK healthcare system works. Many HVs discussed that families sometimes don’t report their immigration status and “stay under the radar”(HP5) because they fear being reported to social services or deportation.

The pandemic reportedly had a significant impact on U5TA, primarily among those with NRPF status making them even more vulnerable. This occurred for a variety of reasons including the cessation of applications made to the Home Office, the closure of many charities and other venues for getting support, as well as a reduction of ‘cash-in-hand' work meaning families were unable to pay rent and ended up accessing social care.
“...in terms of the deprivation that a lot of these families experience who do not have re-course to public funds because of their immigration issues, they are families who have struggled the worst, I would say, during the pandemic...families were stuck...didn’t have any status at the time, who were very much invisible, but were working for cash-in-hand, so they were maintaining their families. But the pandemic happened, and all the work stopped. Therefore, they weren’t able to pay their rent, so, therefore, they were coming through the front doors of social care, and these are the families that we’ve been working quite long and hard with since the beginning of COVID.”(LA1)

Professionals reported that these families were more likely to be put in hotel rooms where they weren’t able to cook traditional family delicacies or healthy meals as recommended by HVs and HPs. Food insecurity was prevalent as families were unable to afford three square meals and many relied on school meals and foodbank vouchers from HVs which were described as a “saving grace”(HV3), however, many of these venues were closed during lockdown. In some TA with shared facilities, if the queue was too long to cook, families often resorted to fast food to feed their children. Financial insecurity also meant that families were unable to afford transport to access services based on the geographical location of their accommodation. Transientness was a barrier to schooling and/or employment opportunities for parents/carers often resulting in financial insecurity. 22

U5TA families with NRPF (or insecure immigration) status had a knock-on effect for professionals: sometimes families would disappear before their next health visit, and it was unclear whether they had returned to their country of origin. Rising financial insecurity and child poverty during the pandemic also led to increased prevalence in homelessness and workload for professionals, especially NPs and LAs. 22

**V. Mistrust and Communication Skills**

Gaining the trust of U5TA families was of utmost importance. Community ties and developing trusting relationships with a particular ethnic and/or cultural group enabled professionals to deliver services to children within the community. 22

“...some people don’t believe in immunisation...and you tell them about immunisation, [and] it’s not something that they do, or they want to do...when I was in the Jewish community...Immunisation you have to literally [have to] win their trust before they can immunise their children, and if one person says to them, this nurse is good, you can let her immunise your child, yes, the whole of them will come, but if something negative, nobody will come to you, so you also need to win their trust.”(HV5)
Families were reportedly “a bit wary of professionals” (HP5), suspicious of mainstream services and felt like they have been failed by services (i.e., health, social, housing) when they had moved so many times. “I think the work that we have to do is about gaining their confidence in using our services. It may be that you’re dealing with a client that has been moved 20 times, so by the time that they see us, it might be that their faith in services is completely eroded because they just have kind of been left behind. They’ve been unseen, unknown, unnoticed . . . .” (HV4)

The perception that families mistrusted healthcare providers, services and the overall system in general seemed to be a challenge for all participant professionals except for NPs. Some HVs noted that their role was to earn back trust and help families rebuild their confidence in order to access services. LA2 discussed mistrust from a different perspective, suggesting that some families were not forthcoming with their or their child’s information [i.e., immigration status, finances, health, and wellbeing, etc.].

Trust was also influenced by the professionals’ communication skills. The importance of good communication skills was emphasised with a nod to shared-decision making.

“I think it’s more about understanding because health visiting services, in particular, is not something that’s universal, universally available across the world, so I think it’s kind of breaking the barriers in terms of understanding what our role is and what we can bring to that family. So, I think this is where [the] kind of our communication skills are important, you know, and it’s about utilising interpreters so that we can be clear to parents, so that . . . we know that they can understand what we’re saying to them and then they can be involved in the discussion as well.” (HV4)

HVs also discussed keeping USTA families engaged with services by contacting them about missed and follow-up appointments. HP5 explained how she was lenient about missed appointments when usually a family would be dropped from the service if they did not attend two consecutive appointments.

Many professionals discussed “going the extra mile” (NP1) for USTA and their families. For example, NP1 gave an example of a mother who couldn’t get her child’s inhalers because there was no interpreter at the GP to understand what she needed, and the child ended up in A&E because of asthma attacks. NP1 acted as a facilitator by intervening on the families’ behalf and was able to identify and
communicate the actual problem as a logistic systems-level issue, not a neglect issue on the parent’s part. 22

Community Level

The main barriers frequently highlighted were safety/suitability, overcrowding/shared facilities, lack of stimulation and outdoor space, dampness/mould, pests/vermin, and lack of social support/community presence. 22

I. Safety and Suitability

Professionals were asked about what 1) they thought about the quality of TA and 2) if that had an effect on U5TA health. The most common responses to 1) were: “unsuitable,” “poor quality,” and “not fit for purpose”, and to 2) were “100% percent” and “absolutely”, respectively. Professionals argued that the TA environment was unsuitable for the needs of families. 22

“...I don’t think I’ve been to any temporary accommodation, that is, you know, that is conducive for families. I don’t think I’ve been to any, to be honest with you.”(HV2)

NP1 described that quality ranges by type of TA and suggested LBN provides poor-quality accommodation. 22

All four professional groups discussed the general safety of TA properties with a lack of security and safety provisions. There were multiple reports of unsafe, steep stairs, which weren’t childproofed or accessible 22 for under 5s and a buggy/pram.

“There were safety issues as well...one family was in a converted pub, and they had two rooms...there was a safety aspect in terms of the parents had to be with the children all the time. They had to go down the corridor and downstairs to do the washing up in a tiny sink. There were no kitchen facilities, and yeah, it was really, really tough for them...there was sort of like bunk beds in one room, so there wouldn’t have been anywhere for the children to play. The ac-cess to the building was a fire escape...[but] I think mom had a buggy [and how] she just used to struggle going up and down with the buggy, as well as the other children...”(HP5)

Another example of unsuitable housing included wheelchair users who were placed on the third floor of a building without a lift. HP5 and some HVs reported hazards to the landlord, LA and even local MP. Likewise, TA with bunkbeds was assigned to families, although it was not suitable for U5TA with SEND.
Professionals discussed how some U5TA tenants had experienced domestic abuse and perceived they didn’t feel safe in TA when sharing tenancy with individuals, especially those who struggled with drug addiction and/or were recently released from prison. 

In addition to reporting that they worried for the safety of U5TA, professionals also feared for their own safety when delivering their service onsite as highlighted by HV2 who described feeling scared because of the poor lighting and “people loitering around smoking”. 

“It’s a B&B. Bread and breakfast. It used to be a bread and breakfast but I think it’s now used mainly for our temporary accommodation. It’s a very big building but even when you are going in as a professional, you are scared because the lighting in the building is not right…we see people loitering around smoking, you know, so you, yourself as a professional, you feel all scared and, you know, on top of homeless families that have young children, they’re not able to come out because it’s not safe for them. Yeah. So those are the kind of accommodation that we’re talking about.” (HV2)

II. Overcrowding and Shared Facilities
Most professionals described overcrowding and shared facilities (e.g., bathrooms, kitchens) as barriers in the housing environment including four or five family members living and sleeping in the same room. Whole families sharing one room caused more exposure and risk to infections including COVID, especially during lockdown.

“A lot of the families I work with tend to share one very large room that sleeps about three, that sleeps a family of five, which I don’t think is very healthy because when one child has any sort of infection, I’ve got a family of five at that moment where two of the children are three and a half and five. And obviously, they’re mixing at school. There are infections there in infants…So, when one child comes home with a cold, everybody will get it because they’re all sleeping in that room, even though they have access to separate kitchens and bathroom. I don’t think it’s fair. I don’t think it’s healthy or appropriate for parents to sleep in the same room as their children.” (LA1)

Furthermore, some HVs said families were sleeping in the same bed including newborns and infants, thereby increasing the risk of Sudden Infant Death Syndrome and mental health difficulties. HPs worked with Scope, a sleep support charity, and a parents’ group in LBN called SENDIASS to mitigate the impact that housing had on children’s sleep.
Professionals described how the unsuitable TA environment caused frustration for them because families couldn’t follow their prescribed recommendations (e.g., therapies, diets) due to a lack of space including to cook. One HP described adapting her dietary advice for families who only had access to a microwave. Professionals described that SEND is a subgroup of U5TA that is often missed from the conversation. U5TA with SEND experienced greater challenges from the lack of space to put on medical equipment (e.g., oxygen tanks) or do prescribed physiotherapy, making their condition worse.  

“I work with children with additional needs. There is no space for them to keep their medical equipment. So that means they can’t have the therapy or exercise that I prescribed by the therapist. They cannot be done because there is no place in the first instance to put the equipment.”(HV2)  

III. Lack of Stimulation and Outdoor Space
In addition to indoors, professionals described the lack of outdoor space and access, which meant that U5TA did not have a place to explore, play, run or stimulate the senses, all of which are vital to the development of fine and gross motor skills.  

“Children grow by, you know, play and stimulation, but in their case, they are limited; they can’t do all that. There is no garden for them to play, so they are confined to the four corners of the room, thereby making their health condition worse.”(HV2)  

Whilst participants acknowledged that even pre-pandemic U5TA were “quite delayed in their speech” due to lack of stimulation in the TA environment and sometimes “were under percentiles for their age...(HP5),” the pandemic further exacerbated individual child health outcomes such as delay and regression in developmental milestones and behaviours including toileting, feeding skills, emotional regulation, and social-communication skills.  

“But then in terms of their milestones, I think I have seen in terms of speech development…there’s been an increase in the amount of throwback I had to do in speech delay. And I think that’s definitely tied into COVID and that there are no children centres, so it’s stimulation issues, so it’s kind of lack of stimulation that could be the cause of it. But then, also the fact that there aren’t any facilities that are available in the Community for children to access, play and explore [or] school to help improve those skills [which] are lacking.”(HV4)
IV. Pests, Vermin, Dampness and Mould
All professional groups reported prevalence of mould and/or dampness in the majority of TA in LBN. Dampness and/or mould were reportedly the cause of skin infections, respiratory illnesses, allergies, and exacerbation of asthma attacks.22

“Another major one is like infection. When they are in more dirty environment, it affects their health especially children with asthma. When they live in environment that is damp with mould, it increases, you know, the rate at which they wheeze. It affects the respiratory system, and then they start having to go to Accident and Emergency all the time because of the poor effect, I mean, of housing on them, some of them.”(HV2)

Professionals reported the dangerous combination of having pests and vermin with a mobile infant or child in the early years and the impact this could have on their health.22

“ I would say breathing, definitely respiratory difficulties, which then leads onto triggering other things like skin irritations, especially when you’ve got pests, and there’s droppings around the properties. [Be]cause children, especially under-fives, they will crawl, they will walk, they will pick things up and put them in their mouths and so, there’s quite a lot that I would say would affect them and that could be the worst-case scenario that affects their development.”(LA1)22

V. Social Support and Community Presence
Charities, children’s centres, and community centres provided links for professionals to access U5TA and for families to access health care services, which was crucial and bi-directionally beneficial. HVs described making referrals to food banks, charities, children’s centres, and housing support via Shelter. These were also identified as safe places and escapes for families providing numerous health benefits. However, the pandemic stopped usual access, especially during lockdowns22 as highlighted by HV4:

“Yes, because there’s no escape from it…we don't have any power to change where they're living…we don't have that authority…it's in the hands of the housing services or who's working with that family, but you know, before COVID, at least we could provide them with alternative places, provide them with safe places that they could go to—children centres, activity groups, you know where, at least, that they can have that safe space where their children can play, where they can explore, and you know it would be an escape from their surroundings...because...being in these places would be detrimental to anybody's mental health…it's not healthy either…it's quite small, it's cold, it's damp so, at least, we were able to provide...these safe places in the community where...their children could play and safely and learn these new skills and even be exposed to other children because they wouldn't [or] might not have that [at] home,...which is important for them to develop...”(HV4)
All professional groups commented on how repeatedly moving in/out of a borough (i.e., transientness) impacted families’ social support on the community level and awareness of services in that area and how “…it's just really important to just not expect people to be able to just find these services, particularly now that there's so many barriers in the way to doing that(NP1).” Some policies in TA included strict no-guest policies creating challenges in co-parenting and receiving support from family or friends. Other reasons parents experienced a lack of social support included not wanting visitors because there was no room and/or they were embarrassed with where they lived. The lack of social support had a knock-on effect on parental mental health.22

“There's low self-esteem for [the] parent. They are not happy. They're not comfortable…with what they've got. They're not able to mix with other parents…even when they take their children to school because they're not proud of where they are living, so it has a significant impact, not on the child alone, [but] then even on the parent…”(HV2)

Professionals emphasised that the pandemic had introduced new barriers by reducing their community presence. Many HVs, HPs and NPs relied on community outreach to reach the most vulnerable U5TA families who might otherwise be invisible and did not have digital access, which was also a systems-level barrier.22

“We probably aren't reaching as many families as we could be because we don't have a community presence at the moment with everything shifting into digital services and also not all families are tech savvy. So, you know, we may do our initial contacts with our clients. But our main way of communicating with them moving forward to deal with their case would be via email and telephone and it's not very often that you will get good correspondence back and because it's just not the way that they are used to dealing with things.”(NP2)

Unawareness of their services prevented U5TA and their families from getting “in the door” (HP2) and “to the service…”(NP1), so professionals were dependent on referrals from other services, including charities. This became a bigger barrier during the pandemic when families would be referred and normally do walk-ins, but the digital shift and poverty, especially when language, lack of Wi-Fi, phone credit, etc. were also barriers. In contrast to the experience of HV, LA1 said her clients were doing well despite COVID but associated this with her going the extra mile and ensuring that families were able to access health services.22
Systems Level

U5TA and their families experienced numerous top-down barriers, which influenced their ability to access health services and achieve optimal health outcomes. Moreover, professionals faced systemic and systematic challenges when providing their services, including discontinuity of care, low housing availability, virtual assessments, lack of outreach models, heavy workloads and low capacity, and short time in their current job position. Many systems-level barriers were interrelated or precipitated barriers on the aforementioned levels.\textsuperscript{22}

\textbf{I. GP Registration, Service Closure & High Demand}

The difficulty of registering with a GP was a frequently cited issue since GP surgeries are the gatekeepers to other health services in England. These difficulties stemmed from U5TA not having a fixed address, deregistering, and registering with a new GP after moving out of borough, and language barriers as most GP appointment systems and registration intake are in English only as well as online creating digital inaccessibility. U5TA with NRPF status had even more difficulties accessing GP services, with LA1 commenting that they often wrote letters to the GP in order to try and facilitate access for the families. Professionals reported that such difficulties led to many missed immunisations, lack of continuity of care, records not transferred efficiently and disengagement with health services.\textsuperscript{22}

High demand and heavy workloads were commonly cited barriers. According to HP2, HVs were understaffed and did not have enough time to do home visits, which was the most important environment to evaluate the child in versus the “sanitized view” in the clinic. Another HP said that therapists were understaffed and overworked causing anywhere from a six-month to two-year waiting list for speech and language therapy.\textsuperscript{22}

All professionals reported that COVID had exacerbated the difficulties families experienced accessing health services, including GP appointments, health visitor appointments and dentist appointments, and most worried that, as a result, U5TA were behind in their mandated reviews/checks for early years.\textsuperscript{22,396}
“…when I’m thinking about it, it [COVID] has made a huge impact…I’ve got lots of families who want to [go to] dentists, and there’s specialist dentist service, but they can’t get to them. Health visitors aren’t going out…There’s a lot that’s changed for COVID because if we’ve all shut down, although we didn’t, this is what I don’t get, I still carried on—I did a lot of stuff with video, admittedly for a while, but we opened clinics up again. Not quite sure why everyone else hasn’t…even that GPs and things like, what’s happening? So, I do worry…they haven’t got the same access they would have before COVID because there just isn’t the appointments that were, everyone’s really behind.”(HP4)

During COVID, the usual access channels for families to see the HVs, such as children’s centres, were reportedly not open, which meant that HVs had to reach out to those families proactively.

“Because I think before…clients that I work with, quite often see the same health visitor like every week or something at the Children’s centre because that’s where he goes, so they just happened to kind of see them. But now it’s kind of relying on that client or that health visitor to go out of their way to have a call or visit, which obviously the health visitor has just to do to the best ability, but they have to see so many different families that maybe families those that they need support but who don’t know how to reach out for it.”(NP1)

II. Continuity of Care and Transientness

HVs discussed the difficulties of knowing if a child has moved out of or into their area, which could only be determined once the family had registered with a different GP surgery. The lack of a centralised tracking system led to poor communication between clinicians and HVs about who is responsible for delivering care.22

“So they may be in the area, and we may not even know about them. But some of the barriers are also around whose clients are they because they [are] really registered to another local authority and therefore, one could argue that they are the responsibility of the health visitors in that area. However, while living temporarily in our area, I think geographically, we hold an element of responsibility, but there’s a barrier in communication between I think with some of the clinicians may experience, barriers in terms of communication around notification of movements into and out of the borough in a timely manner. For that really hinders developing, you know, implementing effective care packages to be [able to] meet the individualized needs of those families.”(HV3)

More specifically, HVs and HPs discussed how the transientness of families meant that therapy sessions stopped and had to be restarted whenever a family moved, which had a cumulative effect on their continuity of care. HP3 highlighted the constant moving and lack of continued care was often distressing for children, particularly those with autism, as they struggle with change.22
III. Digital inaccessibility and Virtual Appointments

Around half of the professionals reported digital inaccessibility as a barrier to accessing services, particularly acute during the pandemic when many services shifted to the digital realm instead of face-to-face/in-person. Professionals gave various examples of how this shift affected families: many U5TA families a) didn’t have internet access (as this was not automatically provided to families living in TA), and/or a device to access the internet, b) were not technologically savvy and/or c) were not comfortable with writing emails/answering the phone when English was not their first language.

From the perspective of professionals, many parents could not afford computers or tablets, making it difficult for them to schedule and access online appointments or only having one phone, making it difficult to tackle concurrent issues such as housing and benefits.

“I think we all assumed that most families did [have internet access], but it’s still some-thing that, yeah, not all have, especially if they’re in temporary accommodation. I think, you know, things aren’t always set up, and because they don’t know how long they’re going to be there…it’s something we’re still battling with and again.” (HP3)

Some health professionals discussed if families had internet access, had a competent grasp of English and didn’t want to come into clinic/hospital, they could make use of online therapy videos provided by HPs.

HV’s discussed how it was difficult to evaluate skills (e.g., developmental milestones) virtually and had to rely on the parent’s testimony, especially during the early days of the pandemic when appointments were by phone.

“...the technology as well, it’s not 100% sometimes, it can cause like glitches in the as-assessment. It might not work, or they can’t hear you; they can’t hear me. I think it’s better now, now that we have video, it’s made things better, the assessment better. As opposed to the beginning of lockdown when it was just on the telephone, which is more difficult because you can’t see anything, so all you can take is what the parent has told you at that point.” (HV4)
However, professionals did have a “failsafe” (e.g., NICE Traffic Lights assessment\(^\text{\footnotesize\ref{note1}}\))\(^\text{\footnotesize\ref{note2}}\) to see U5TA in person if they were particularly concerned.

“But then again, we always have failsafe, so we do have options to bring them into clinic. But then it’s not the ‘go to’ anymore, virtual is the ‘go to’ now, so I have found it challenging.” (HV4)

NP1 noted that whilst many parents were not comfortable on Zoom, professionals themselves also had to adapt to the new technology, so it was an issue for both parties.\(^\text{\footnotesize22}\)

**IV. Housing Availability**

Housing availability was identified as a systems-level barrier, particularly in cities. According to professionals, some families were given housing far away from health services, which meant that both geographic distance and transportation costs to access health services became barriers. Although families were offered accommodation far from London, which was less polluted and more spacious, many didn’t want to move because of affordability, culture and fear of moving away from their support networks of family and friends, as well as fear of the “unknown”.\(^\text{\footnotesize22}\)

“…some families, they live in their boxes because they sometimes tell them, oh, you’re going to be here for three months, six months, and they’re waiting to be moved forever, and you’ve got families that they’ve been living in accommodation for ages, some of them up to eight [years] you know so they’re just sitting there waiting. Obviously,…the demand to live in London is more…” (HV7)

LA3 attributed the housing shortage to boroughs bidding against each other for affordable housing and not enough to meet the demand. Some professionals mentioned they contacted social care on behalf of families when they were at risk of homelessness and were told that they had to wait until the last day of eviction before contacting them for help, which was too late for their families, i.e., they were made homeless. Many specialist HVs emphasised that U5TA with SEND waiting extensive periods for suitable and accessible housing.\(^\text{\footnotesize22}\)

\(\text{\textsuperscript{\footnotesize1}}\) National Institute for Health and Care Excellence. (2019). Traffic light system for identifying risk of serious illness in under 5s. In \textit{NICE} 2019.\(^\text{\footnotesize398}\)

“You receive an email from new[ham] housing saying there’s no houses out there for this family at the moment. There’s nothing. He may have to wait a year even being on emergency [list].” (HV1)

Professionals discussed how the lack of stable housing triggered a top-down escalation of issues starting from housing which then impacts the child:

“…I think that the housing, in a way, it can impact it’s like a chain reaction. It can impact loads of other parts of the family’s life. Most about primarily their health basically poor housing can equal to having poor health because it limits the access to health services if there are not services that are kind of in tune to picking up those families that are kind of transients basically.” (HV4)

NPs acted as facilitators between families and GP surgeries, but also assisted with applications for housing and benefits. Examples of teamwork among the professional groups was highlighted as a way to get housing for priority-need families (e.g., single-parent household and child with SEND). Professionals worked together to LBN’s housing office to challenge inadequate housing on a policy level to improve the TA living conditions.22

V. Policies and Lack of Outreach Models
Although professionals were familiar with some of the policies in place that apply to families experiencing homelessness, most weren’t familiar with the major policies that currently impacted this vulnerable group at the time of the interview (e.g., Homeless Reduction Act; Housing Act; Section 17, Children’s Act) or didn’t think there were any policies specific to TA or homelessness AND under 5s.22

“LA2: Well, I’m not to be honest, I am not, I am not even sure about the policy we have for particular under five, so we don’t have a policy as such for just under five so I can’t really answer that.

DMR: Well, that’s correct, there is no policy and are you familiar with the homelessness reduction act?

LA2: I’m not, really not too much, no.”

Some were dismissive of the impact of existing policies on families experiencing homelessness; “...if there is, then the policy is not working and it's not effective, because as far as I know, with or without a policy, [it] is still the same.” Those that were aware of existing policies (including HVs and HPs) expressed that they were vague and lacked accountability for the suitability of TA and child safety. Reduction in government funding for schemes such as Sure Start and oral health
programmes,\textsuperscript{31} in addition to services cuts as a result of COVID, were also highlighted as examples of how government policy had a direct impact on U5TA.\textsuperscript{22}

An HP and a LA discussed the lack of outreach models (a proactive engagement approach focused on those least likely to access services) tailored to U5TA and their families, which only heightened their invisibility factor. Outreach models for U5TA were compared to those tailored to rough sleepers, which they felt had better strategies and were more successful.

“So, I think in terms of accessing, I think it is harder when population groups are a bit more dispersed …in the sense of I’m comparing it with rough sleeping and you can have more, there’s more outreach models that you’ll know certain hostels that you can work closely with. There might be outreach street workers. I’m not saying it in any way, this makes this easier, but you’ve got greater strategies. I think, with families in temporary accommodation, that can be a bit harder. I think they’re not necessarily as visible in terms of being seen as homeless.”(LA3)\textsuperscript{22}

6.4.5 Recommendations from the Professionals
Professionals believed the barriers above extended beyond Newham, London, and England, but most imagined that housing quality was particularly bad in cities because of higher demand. Professionals were asked to suggest policy recommendations to address these barriers, which also fed into the recommendations in Chapter 7. Co-production\textsuperscript{399} and reverse innovation were discussed as practical approaches or solutions to strategic planning, service development and policy change. All professionals agreed on the importance that U5TA families should have a say in the policies/interventions that affect them:

“There’s a charity where no one on the board is autistic. They don’t get involved, you know, it’s that type of thing [where] you’re not, you’re not being a voice for the people that are needing the services.”(HP4)

Although most agreed in principle on the value of involving families with “…lived experience, because they know what works and doesn’t work”(LA3), some expressed less optimism because U5TA families “…have got bigger fish to fry, that's the problem, and it’s hard to people persuade people, especially if they’re working age adults and they’ve got kids, that they need to [get involved and] give up some of their time coming [to co-production meetings]”(NP2). Furthermore, some argued that policy recommendations and providing families with advice are unproductive
because the real need is building more social housing, which is at the root of the problem.

“But all I can say is we just need more houses. You can talk to people until the cows come home. You can give them as much advice as you want, but at the end of the day, if the houses are not there, it’s not going to happen. Families are not going to be rehoused just because you’ve given them advice and support...” (HV1)

Professionals liked utilising reverse innovation in the UK to reach more U5TA, especially those who fell behind during the pandemic. Some professionals gave examples of adult health services (e.g., cancer screenings, dental check-ups) which were already being delivered in the London area via mobile health units, but no services specific to U5TA except the Hackney Playbus, a double-decker bus providing play opportunities and support in their local neighbourhood (NP1) although this wasn’t a health service.

Policy recommendations included: better mental health services, more support for refugees, families with NRPF status and children with SEND, employment opportunities and access to adequate employment training, and “…increasing social care budget so that councils have enough money to spend on the families, you know, this is a huge top down, need a huge top-down approach (HP4).” HVs and HPs recommended giving families enough notice before moving, especially those who have children with autism, to prepare for the transition. Notably, one professional insisted on the current equality in service vs equity: “I’m not sure what can change that but in terms of our services, and you know children under the age of five, whether they’re homeless or not, have access to the full amount, equal service as everybody else. I don’t see there’s a difference in that aspect.” (LA2).

6.5 Discussion
To the best of my knowledge, this is the first qualitative cross-sector study conducted in England exploring how various cross-sector professionals perceived the impacts of living in TA and the COVID-19 pandemic on U5TA’s health care service access and health outcomes. This study also elucidated professionals’ own experiences and challenges in delivering services to this specific population. Various professionals, who worked either directly or indirectly with U5TA families in
LBN, described multiple interrelated factors that were generally felt to be barriers to service access and to the parent/carer's ability to support their child(ren) to optimal health and developmental outcomes. There was a high level of agreement among professionals that such barriers experienced by U5TA families included poor parental/carer mental health; unsuitable housing; transient circumstances; lack of social support or community; mistrust of mainstream services; NRPF status, financial insecurity, food insecurity and loss of informal jobs. Fewer enablers (e.g., children’s centres and charities as safe spaces) were also reported. In addition, professionals mitigated some of these barriers with good communication skills, developing trusting relations, and through community facilitators and in some instances where the professional acted as a facilitator.\textsuperscript{21,22} Professionals also provided key policy recommendations to address these interrelated individual and structural barriers, most of which were top-down and had to be addressed at the systems level.\textsuperscript{21,22}

However, the pandemic amplified health inequalities and inequities, disproportionately affecting the lives of U5TA and the ability of professionals to deliver quality care to U5TA across all five domains of access.\textsuperscript{115} According to professionals, pre-existing systemic barriers were exacerbated during the pandemic by the reduction of in-person services that necessitated health and social care services to remote delivery. Consequently, differential impacts of digital poverty, language discordance and inability to register and track U5TA rendered them \textit{invisible} to these services.\textsuperscript{13,21,22} All professional groups reported closures of local children’s centres during lockdown. However, these services remained open throughout the pandemic, albeit with reduced services and some safety restrictions regulating who could attend (e.g., vulnerable children), thereby suggesting a potential communication gap among different services and one of the reasons why attendance fell during this time.\textsuperscript{22,401,402}

**Workload**

During the pandemic, the lack of physical community presence, which was a usual access point for professionals, made mitigating these barriers more difficult. It required professionals to engage in a lot more facilitation (i.e., effort) since, at times,
there was little face-to-face contact. Some professionals also reported they had been in their current job roles for a short time which possibly indicated frequent turnover and their lack of familiarisation with LBN communities. These perceived barriers paired with the increased workload and demand on HVs were also found and comparable to another study conducted on health visiting in England during the pandemic, which found 38% of respondents (n= 253/663) had their caseload increase by 50% or more, and 41% lost staff on their teams due to redeployment.22,403

**Housing Environment**

From the professional perspective, barriers found in **Phase 4** were comparable to those found in **Phases 1-3 (Chapters 3-5)**, thereby strengthening and validating those previous findings. In the housing environment, severe HHSRS hazards and lack of safety provisions (i.e., baby/childproofing) for stairs and windows were discussed under the suitability of the TA, including the use of fire escapes for building entry, also shown in **Phase 2 (Chapter 4, Section 4.3.1, VIII)**. Inadequate kitchen and toilet facilities reportedly had a knock-on effect: poor nutrition and oral health practices. As discussed in **Chapter 3**, the ENFAMS (Enfants et Familles sans Logement) survey studying families living in emergency centres, long-term rehabilitation centres, social hostels, and centres for asylum seekers in France, anaemia was positively associated with child food insecurity, no cooking facilities, and monthly household income in the 0.5–5 years stratified age group.22,217

Professionals commented on safety and how the TA environment promoted risky behaviour, such as sleep arrangements (e.g., babies sleeping in the same bed as the parent(s)) and no one to help single parents to watch children/or help follow through with strategies like leaving children alone to go out and smoke. Such risky behaviours also occurred in **Phase 2** (e.g., when a child was reportedly put in the highchair alone out of sight while their mother showered).9 Professionals also articulated fear for their own safety while working on-site and the safety of USTA in the TA environment. Even though professionals acted as facilitators by adapting and tailoring strategies for this environment, and by writing to the housing authority,
landlords, etc. for repairs, the lack of response and the prolonged periods that families spent living in TA with children further demonstrated that current policies were not being followed or strictly enforced.9,22,100,404 This also included the Licensing and Management of Houses in Multiple Occupation and Other Houses 2006 regulations on the bathroom-to-tenant ratio in TA for multiple-sharing households (i.e., no less than one bathroom/bath or shower/lavatory for every five people sharing). These testimonies indicate that TA was overcrowded and increased the risk of infection, especially during the pandemic when it was difficult, if not impossible at times, to follow national social distancing guidelines.22,100,404–406

Child Health Outcomes
Professional commonly reported poorer health outcomes (e.g., respiratory infections, anaemia, asthma) and poor health services access (e.g., vaccine delay, continuity of care) among U5TA, which was similar to findings in Chapter 3.25
Moreover, professionals emphasized as well as recommended that families need to be able to access free and safe spaces for health services but also to provide them with an opportunity to escape from their surroundings and interact with other children to develop physical, cognitive and social-emotional skills through play. A previous qualitative study of families with lived experience also identified space obstacles and a need for children’s activities, as well as the top three barriers discussed by professionals in this study: transportation, employment, and child care.22,407

From the professional perspective, U5TA experienced greater social determinants of health (i.e. “social, physical and economic conditions that impact upon health”-WHO),28 but also health inequalities, as found in Phase 3. These deprivations, barriers to housing and services, and indoor living environments have been shown to be important predictors of child mortality.408 The combination of these poorer outcomes and adverse childhood experiences (ACEs), some of which occur before the child is born, have short- and long-term implications for the child and adult lives of U5TA including chronic health conditions.22,409 Similarly, in Los Angeles, the severity of homelessness and ethnicity significantly predicted worse outcomes, including low birth weight and preterm births, compared to the national average.410
Mental Health
Poor parental mental health was identified as an important ACE and potential barrier whether it was a cause or consequence of experiencing homelessness, which was also found in Phases 1 and 3. Likewise, in the London Borough of Bromley, high levels of poor mental health, poor health behaviours (e.g., smoking) and increased uptake of secondary care services were observed among 33 individuals living in TA. In Phase 4, from the provider's perspective, poor parental mental health was a dominant theme and felt to be caused by a plethora of interacting factors, including homelessness status or transientness, poor quality TA, no social support network, and many competing priorities, which then affected the child(ren)'s health and wellbeing. In Phase 3, living in TA was associated with poor parental mental health. The Millennium Cohort Study also found an association was found between moving more frequently and poor self-rated health. For comparison, in the US, mothers with a history of homelessness had higher adjusted odds of fair or poor health and depressive symptoms compared to consistently housed mothers. While in France, another ENFAMS study concluded that children growing up and experiencing homelessness have psychological difficulties which can risk poor mental health and educational outcomes in the long-term. However, unlike this study, these quantitative studies lacked qualitative insights from cross-sector professionals.

6.5.1 Strengths and Limitations
These novel insights obtained a cross-sector professional point of view with a focus on U5TA specifically. A strength of this study was the qualitative insight, including front-line accounts with a range of professionals and their perspectives on the barriers and facilitators experienced by U5TA in accessing healthcare and optimising health outcomes. In addition, they explained their own challenges in delivering services to this population. This study added the professional point of view, while Phases 2 and 3 were the direct U5TA families’ frame of reference. This bi-directional approach also explored the added impact of COVID-19 on U5TA from the perspective of professionals and how their services and/or experiences when working with U5TA and their families had changed as a result of the pandemic compounded with pre-existing and new ethical challenges. These areas that had yet
to receive much attention in the literature. Previous studies had not strictly documented the greater barriers experienced by U5TA due to differential definitions of homelessness nor those with SEND exclusively, a subgroup that is often missed. These interviews demonstrated the need for critical evaluation of current policies that impact U5TA from children's rights to housing to health care provision. The inclusion of many key professionals across sectors allowed for systems mapping to gain a better understanding of the housing crisis complexities in which public health challenges emerge.

Every study has its limitations, but the study may still be generalisable to other populations in England given the high prevalence of child homelessness in TA, which may also apply elsewhere depending on the TA provided. In this case, potential bias was possible, as in many qualitative studies but minimised by using rigorous and replicable methods with an audit trail. Although qualitative research is said to be limited in its ability to quantify impact, the previously mentioned studies had similar findings, thus supporting this study’s results. This study had a quantitative element by examining the presence or absence of themes/sub-themes among professionals per group, provided visibility to specific issues. Another limitation was the difficulties encountered during recruitment due to the unpredictability of lock downs, increasing the workload for professionals and possibly explaining the lack of representation from the LBN Housing department. Therefore, that was a missing piece of the analysis and would have added value in the systems mapping process in order to coproduce recommendations with all relevant partners. Snowball sampling was the most practical approach to recruitment given the circumstances; however as seen in this case, it didn’t guarantee that the sample was representative of the target population or free from sample bias. Although the sample size was small, there was evidence to support that saturation could be reached at this size.

6.5.2 Implications
Phase 4 also supported the main hypotheses that U5TA and their families face numerous multi-level barriers to accessing health services and attaining optimal health outcomes with limited facilitators to mitigate these barriers due to the lack of
coordinated policy and strain on resources. From the professional perspective, one of the major implications of this study was how many barriers were interrelated and top-down with a ripple effect often causing more barriers. In addition, the pandemic was found to exacerbate existing barriers, demonstrating how U5TA are vulnerable to the adverse effects of the pandemic and have the potential to be left more vulnerable to the ongoing impact of the post-pandemic recession.\textsuperscript{22}

The pandemic reportedly caused further financial and food insecurity among U5TA families with NRPF status because many parents/carers had “no right to work” and relied on informal jobs (e.g., cleaners, restaurants). Oftentimes, these jobs were not available during lockdown or didn’t have a remote working option. As recommended by professionals, employment training and opportunities for parents/carers might help alleviate some of these multiple, interrelated barriers. However, there was recognition that a national policy would still be needed to address their ability to work and additional systems-level barriers that are the root causes of health inequalities.\textsuperscript{22,42,415}

Professionals perceived the transientness of the families to be a consistent theme across all barriers impacting not only health care access but also a significant determinant of health for U5TA and their families. This demonstrated that these barriers require cross-sector, progressive actions tailored to the specific needs of U5TA and their families to address their heightened vulnerability. The reported dearth of outreach models for this population can be the place to start including the introduction of specific training in trauma-informed care, both vital and highly recommended for professionals who come in contact with this vulnerable group. Furthermore, addressing the digital divide through improved digital equity\textsuperscript{416} is vital to ensure U5TA and their families access health services. These qualitative insights also further supported housing as a socio-political determinant of health inequality\textsuperscript{356,417} and a driver of significant inequity,\textsuperscript{15} which has policy implications on the local, national and global levels.\textsuperscript{22}
6.6 Chapter Summary

- A variety of key professionals were represented in this qualitative study.
- Professionals described the impact of U5TA’s transientness and invisibility factor in addition to the COVID-19 pandemic on families and their services.
- Living in TA and the pandemic had an impact on individual child health outcomes, such as delays in potty training and/or regression back into nappies, no longer self-feeding, challenging behaviour and reaching milestones. These data strongly support housing as a socio-political determinant of health and a driver of significant inequity.
- Barriers and facilitators experienced by professionals and their perception of those experienced by U5TA families were found among the individual/family, community, and systems levels (Chapter 2).
- There were facilitators that made service access easier for families and mitigated certain barriers. In some instances, the professional was a facilitator and/or utilised a method that would mitigate the same barriers for both sides (e.g., trust and good communication skills).
- Policies and services urgently need to focus on early development, mental health support, employment training and opportunities, and clearer definitions of what is deemed “suitable” accommodation. Furthermore, tailored outreach models should be developed, and services should provide training in trauma-informed care for professionals who come in contact with this vulnerable group.
- The pandemic exacerbated pre-existing systemic barriers for professionals in how they provided their services, but especially for U5TA, by widening the health inequality and inequity gaps. These now require innovative cross-sector strategies, including co-production of public health services.
Chapter 7

Phase 5. Recommendations & Discussion

7.1 Overview
As shown through this thesis, homelessness is not just a housing issue—it is also a growing public health issue and crisis in England. This thesis is original, unique, and the most comprehensive body of work on these barriers and facilitators experienced by U5TA to date, utilising mixed methods incorporating a scoping review, citizen science approach, methodological triangulation, and quantitative and qualitative methods with triangulation of all findings to produce the final recommendations. My thesis captured a pivotal time since the research was conducted before and during the COVID-19 pandemic. I provided a balanced picture of the health inequalities and inequities experienced by this vulnerable population (U5TA) with different participants from each point of view—families with lived experience of homelessness and cross-sector professionals. My initial aim was to explore barriers and facilitators to optimising health outcomes and accessing health care services for U5TA in England, with LBN, East London, as an exemplar. In March 2020, the PhD shifted to explore the potential pandemic effects after reviewing Phase 1 findings and Phase 2 preliminary findings. To my knowledge, Phases 3 and 4 were the first studies done exclusively on U5TA and their families on these critical issues in LBN and England during the pandemic in collaboration with ActEarly and LBN Local Authority.

This thesis began with a background summary of the importance of the first 1000 days and five years of life, national and global public health programmes/guidelines for children under five, definitions of homelessness, child homelessness prevalence in HICs and England, pathways to homelessness, and relevant policies impacting U5TA. I presented my rationale, research aim, hypothesis, and objectives, corresponding to one of four different methodological studies in a five-phase
framework. **Figure 2.3** is reshown below for convenience and to show how I reached this stage in the thesis.

In this chapter, **Phase 5**, I address RO5, providing and discussing evidence to help inform local authorities and cross-sector organisations about ways to improve health service access and outcomes for U5TA and their families. First, I present a summary and synthesis, followed by a methodological triangulation of the key findings across **Phases 1–4** by six thematic domains to produce comprehensive recommendations. These include a proposed evidence-based framework for TA standards. Lastly, I discuss the thesis's strengths and limitations, directions for future research, and concluding remarks with reflections on my PhD journey.
Figure 2.3 Five-Phase Study Framework [at current phase]

**Phase 1: Evidence Syntheals**
- Background literature review
- Scoping Review: Barriers and facilitators to achieving optimal health outcomes and to accessing health services for under 5s experiencing homelessness and living in temporary accommodation

**Phase 2: Community Study**
- Citizen Science
  - Mobile App Surveys
  - House Visits and Transact: Visits
  - Collaborative Meetings

**Phase 3: Families Study**
- Quantitative Study
  - Online cross-sectional survey; social, economic and health impacts of COVID-19 on pregnant women and families with under 5s

**Phase 4: Professionals Study**
- Qualitative Study: Interviews
  - Health Visitors
  - Housing Visitors
  - Charities
  - Key Informants

**Phase 5: Recommendations**
- Critical assessment of Phase findings from Phases 1-4
- Recommendations with co-production for policy, practice and intervention across different sectors

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**Key Dates**

Phase 1: initial review 2019, repeated 2020 & 2023

Phase 2: conducted late 2019-early 2020, analysis 2019-2020

Phase 3: data collection 2020, analysis 2021

Phase 4: conducted interviews 2020-2021, analysis 2021-early 2022

7.2 Synthesis of the PhD
Multi-level barriers to optimising health outcomes and accessing health care services for this population currently outweigh existing facilitators. Therefore, early prevention is critical: there is a significant need and potential to intervene and mitigate the short-term and long-term consequences on U5TA health and wellbeing to ensure the best start in life and a good quality of life. Furthermore, many of these barriers were interrelated across levels indicating that cross-sector cooperation is needed to co-develop strategies, interventions, and policies to effectively address the different, yet intrinsically linked, variables involved. U5TA and their families were marginalised and vulnerable pre-pandemic, which the pandemic effect only further heightened due to exacerbating pre-existing barriers and creating new ones.\textsuperscript{9,13–15,17,20–25} The main hypotheses are supported based on the accumulation of evidence in Phases 1-4 and the triangulation of evidence in Phase 5.

In Table 7.1, I restate ROs 1-5 corresponding to each phase with the methodologies used in the thesis. Each RO is matched to a brief summary of the key findings to show how each phase met that objective. Although U5TA were the primary focus of the PhD, families could not be entirely excluded as U5TA’s health and wellbeing are dependent on the factors within the individual and family environment, which includes the health and wellbeing of the parent/carer (e.g., socioeconomic position[SEP])\textsuperscript{42} as shown in the concept map (Chapter 2).
Table 7.1 Thesis Research Objectives and Methodology with Key Findings

<table>
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<th>Aims</th>
<th>Research Objectives</th>
<th>Phase</th>
<th>Methodology</th>
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| Using mixed methods, this thesis aimed to:                           | 1. To explore what is known about the range of barriers (e.g., political, social, cultural, economic, educational, environmental) to achieve optimal health and wellbeing in U5TA. | 1     | • Background literature review  
• Systematic scoping review exploring evidence from HICs  
• 43 full texts of primary research studies and systematic or narrative reviews of primary research studies from HICs were selected in the final synthesis.  
• The quality of articles varied greatly because of the heterogeneity in study design and differential definitions of homelessness.  
• Under 5s were rarely studied as a discrete group and often combined with older ages (e.g., ≤ 28 years).  
• Barriers were described at the following levels:  
  ➢ Individual/family level (e.g., ethnicity, immigration status, and fear);  
  ➢ community level (e.g., transportation limitations and poor housing conditions);  
  ➢ systems level (e.g., policies, poor access to medication, absence of care plan, and no insurance).  
  24, 25 |
| Evaluate what was the additive impact experience of the COVID-19 pandemic on health outcomes and access for U5TA and their families. | 2. To explore the potential of citizen science approaches working with families of U5TA to identify environmental factors impacting health outcomes and health care service access. | 2     | • Citizen Science, Newham  
  ◊ Mobile app surveys  
  ◊ Collaborative Meetings  
  ◊ House visits  
  ◊ Transect walk  
• Fifteen mothers with U5TA participated in this study.  
• Key themes identified through methodological triangulation were overcrowding & shared facilities, dampness/mould growth, poor/inadequate kitchen/toilet facilities, pests/vermin, structural problems, unsafe electrics & surfaces that risk causing trips/falls and excessively cold temperatures.  
• Participants reported their challenges in accessing health care services during meetings.  
• The citizen science approach was successfully used to collect meaningful data.  
  9, 17 |
|                                                                                                                                  | 3. To quantitatively explore the barriers and facilitators to health care access and wider social determinants of health during the COVID-19 pandemic for U5TA and their families. | 3     | • Online cross-sectional survey on pregnant women and families with under 5s  
• 2024/2054 reported their housing status, of which 84 (4.15%) households were currently living in TA.  
• Roughly 60% of families reported living in TA for ≥ 12 months.  
• Compared to families in non-TA, families living in TA were more likely to have the following characteristics: lower SEP, NRPF status, unemployed, non-white British ethnicity, non-UK born, single-parent households, and food insecure.  
• Families living in TA were exposed to more housing environmental hazards barriers: overcrowding, dampness/mould growth, pests/vermin, major house repairs needed, broken large electrical appliances, no Wi-Fi, and no access to outdoor space.  
• Compared to families in non-TA, families in TA were less likely to access antenatal care, cumulatively. |
4. To qualitatively explore how key professionals and decisionmakers perceive the experiences of U5TA in accessing health care and optimising health outcomes as well their own challenges providing services to the U5TA population before and during the COVID-19 pandemic.

<table>
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<th>4</th>
<th>Qualitative interviews of health care professionals, housing experts, charities, and key decisionmakers</th>
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<tr>
<td></td>
<td>16 semi-structured interviews with two non-profit organisation professionals, seven health visitors, one GP, therapist, dietician, nurse, public health consultant, and two social workers from the local authority’s NRPF team. All worked in LBN.</td>
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<tr>
<td></td>
<td>Professionals described adverse pandemic effects on U5TA health: delay and regression in developmental milestones and behaviours—e.g., toileting, feeding skills, emotional regulation, and social-communication skills.</td>
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<td></td>
<td>The pandemic exacerbated pre-existing systemic barriers, reduced in-person services, and necessitated remote delivery of health and social care services.</td>
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<td>Digital poverty, language discordance, and inability to register and track U5TA consequently made U5TA less visible to professionals.</td>
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<tr>
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<td>Among U5TA and families, professionals frequently reported the following barriers: poor mental health, unsuitable housing, no social support, mistrust of mainstream services, immigration administration, financial insecurity, and loss of informal jobs.</td>
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<tr>
<td></td>
<td>Professionals reportedly mitigated these barriers with good communication skills, developing trusting relations with U5TA and their families, and by working with community facilitators.</td>
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5. To triangulate data sources from ROs1-4 to produce recommendations to present to health, social care and housing services and relevant sectors for policy change; and make recommendations for potential interventions tailored to the U5TA population and to inform future multisector strategies.

| 5 | Triangulation and discussion of research findings from Phases 1-4 to create recommendations |
|   | Findings and recommendations on key priority areas include: |
|   | ➢ Better data quality and collection e.g., standardized metrics, universal definitions of homelessness and TA. |
|   | ➢ Suitability of TA and presence of HHSRS hazards, e.g. TA Standards Framework |
|   | ➢ 5 A’s of access: affordability, accessibility, acceptability, accommodation, & availability. |
|   | ➢ Impact of COVID-19 on U5TA and future pandemic preparedness. |
and promote cross-sector collaboration.

| | | • Using the evidence found in this PhD, a TA Standards Framework was constructed as a proposed national benchmark that local authorities can use to tailor into their own frameworks to raise the minimum standards for all TA. |
Figure 7.1 is my updated concept map showing the barriers and facilitators found in the thesis. A separate sub-circle was created explicitly for the housing environment because there were so many interrelated barriers among the levels that it was impossible to fit all on the same model and narrowly classify them into one level. The Individual/Family and Neighbourhood environments could fit in the main circle because many of those variables were interrelated with other levels.
7.3 Key Findings and Implications by Domain and Theme

In this chapter, I discuss the following six domains, highlighting the data and key findings from my PhD, how these results are consistent with other existing evidence, and my recommendations. “Domain” was selected as the overarching heading after collating the key findings thematically.

I. Quality and quantity of data
II. Quality and quantity of housing
III. Impact on health for U5TA and parents/carers
IV. Difficulties in accessing health care services
V. Limitations of current policy
VI. Impact of COVID-19 on this priority population

Each domain corresponds to a table showing triangulation across Phases 1-4 by the presence or absence of a specific finding, followed by the Phase 5 recommendations and what level of implementation is required: local, national, and/or global (RO5). These triangulation tables can be found in APPENDIX.S7.1. The recommendations are highlighted in a traffic lights system format based on frequency across the Phases meaning the more prevalent the finding is, the greater priority it should receive.

Domain I – Quality and quantity of data

Throughout this PhD, the sparse quality and quantity of available data on the population of interest were consistently found as an inherent barrier to mitigating those barriers faced by U5TA. These data are critical when measuring health inequalities and inequities and determining intersectional risks for U5TA and their families as well as preventing future episodes of homelessness. Evidence gaps and insufficient data collection methods left an incomplete picture of the barriers and facilitators to optimising health outcomes and accessing health care services among U5TA in England.(APPENDIX.S7.1, Table Domain I) These variables ranged from TA status, housing conditions, socio-demographics, health care access, and vital risk indicators.
I.1 Quality of data
In Phase 1, poor data quality on U5TA became a barrier due to inconsistent definitions and metrics used in data collection, leaving a wider evidence gap. Differential definitions of homeless(ness) and TA continue to impact eligibility criteria and data collection while limiting comparability and generalisability to other studies and populations locally, nationally, and globally within the PhD and more widely. This was a barrier in the PhD: in the scoping review (Phase 1), I set a predefined inclusion criterion, but many studies failed to mention how they defined or determined measures of housing status. Some definitions were as vague as “homeless” or “not housed” to specific as the “McKinney Vento Homelessness Assistance Act” definition. As described in Chapter 3, a universal definition is unquestionably needed for both, that is detailed yet still umbrella terms with new standardised categories and criteria for what qualifies as homeless. A global definition of homelessness has been called for in the past, but something has yet to be implemented as many terms continue to be used interchangeably, thereby adding to the confusion and ambiguity. Therefore, to aid with this process, I recommend a global dictionary and database showing how every country defines and measures homelessness and TA, including criteria (i.e., what qualifies as homeless and eligibility/how they declare it) and what provisions and services, including housing, are available per homeless demographic. This will allow for closer surveillance and credible benchmarks on the global level by the WHO, United Nations and World Bank. As shown, TA can have many meanings and applications worldwide, although, in principle, TA should be a short-term intervention. Since definitions are culturally, politically and temporally dependent, a global database will help monitor how approaches (e.g. policies, services, provision, demographics) differ and/or converge. Will there ever be an agreed on universal definition that can be implemented across the globe? I can't answer that, but this recommendation is a step in the right direction.

Like universal definitions, using validated and standardised metrics is not only desirable but necessary to ensure comparability across studies and data generalisability to the broader population. Overcrowding measures, for example, are highly contested, such as the PPR ratio, bedroom standard, space standard or any
variation of these metrics, some of which depend on the available data as shown in Chapter 5 and Appendix S5. In Phase 3, differential metrics meant overcrowding couldn’t be adequately compared to the larger general population. The UN could work with national governments worldwide to develop the standard metric for overcrowding that can be adopted universally or at least in environments of similar context, i.e. urban areas. If not feasible due to contextual factors, at a bare minimum, England and the UK should adopt a metric to be used uniformly in all official reports and applications on the local and national levels rather than the current medley. More inclusive sociodemographic data are also needed to predict and determine the most at-risk U5TA. Utilising tracer and composite indicators is considered best practice to measure health inequalities and inequities, and again, creating a global data dictionary would help ensure quality data. The National Alliance to End Homelessness has an exemplar database that shows various risk indicators, maps and homelessness trends (e.g. Point-in-Time Count per night by state and county) in the US, all publicly available.423,424 As stated in Chapter 3, a co-developed toolkit of validated and standardised measures would be ideal.

Inconsistent definitions and metrics have led to inconsistent use or identification of homelessness as an ACE and how these are measured. A universal definition of homelessness may also address the global recognition that every type of and reason for homelessness is an ACE. Although a childhood adversity, homelessness as an ACE differs from country to country. In the WHO’s ACE international questionnaire (ACE-IQ), homelessness is implied by questions 5.2 (verbal threats and actual acts of abandonment, e.g., thrown out of the house), 8.1 (exposure to war/collective violence) and 8.2 (deliberate destruction of the home due to these events).425 However, the inclusion of all homelessness types as ACEs is needed. This informs proper safeguarding by accounting for other childhood adversities and possibly mitigates other ACEs throughout the life course. In many HICs, including the UK, ample evidence suggests that adults experiencing homelessness have also experienced more ACEs compared to the general population, further supporting why it is even more imperative to understand the degrees of homelessness children have experienced. Previous studies have also articulated the need to improve the ACE Study Scale with various additions to account for other
childhood adversities and their degree of severity, i.e., length of exposure period. However, the degree of severity, i.e., length of exposure period.

I.2. Quantity of data
Throughout the PhD, incomplete data relating to the frequency of data capture and missing data on homelessness and U5TA, e.g., TA status, housing conditions, age and time in TA, were reoccurring themes. As I regularly observed in quarterly and yearly estimates, the number of children in TA was continuously changing but remained exceptionally high. However, there was no real-time or count data to reflect the periods between quarters to precisely and accurately assess or quantify such trends, leaving out U5TA, who moved in and out of borough during this time. Many statistics lack specific data on age and families’ experiences. In Phase 3, these incomplete data limited my ability to conduct a more accurate representativeness analysis, and even more so, in Phase 2, the data were missing altogether. Frequency of data capture on homelessness is not unique to the UK—some OECD countries don’t follow the same collection intervals and have reportedly not collected any data in over five years. The New York City Department of Homelessness Services in the US collects an average daily census for shelters but only reports data for each first of the month, which are then updated quarterly for public access.

Missing age data was/is also a significant issue, especially among U5TA because there is no national registry for under 5s, and many are not registered with local services due to their heightened mobility and transient lives, as mentioned in Domain IV. This contributed to U5TA’s invisibility factor. A central tracking system or registry could ameliorate the current systemic gaps, as highly agreed upon by key decisionmakers in the health and non-profit sectors (Phase 4). Although these require local and national-level implementation, this is a global issue consistent with other HICs, such as the US. As such, I recommend that local authorities submit TA reports monthly to the Department for Levelling Up, Housing and Communities (DLUHC) to determine both the prevalence and incidence of homelessness. These data could then be transparently published on the Statutory homelessness live tables. Monthly reports collated from pre-existing databases (e.g. need
assessments) and an automated system in the housing office could help LBN and other localities identify the current number of U5TA and registered with health services, the most at-risk households and how to prevent future episodes of homelessness as well as early prevention for health inequalities. Likewise, such data (e.g. unemployment, disability, type of available housing stock) can help determine why so many families live in TA for extended periods (Chapter 2, Table 2.2.), especially those in emergency TA (e.g., B&Bs/hostels), while they wait for stable housing, and determine the extent of the housing shortage in the borough. Although ambitious, publishing migration data can show the movement in and out of the borough providing a more realistic picture of the geographic distribution of TA and housing shortages. Thus, it can inform the local authority and its services (e.g. health visiting, Brighter Futures) about the continuity of care between boroughs, a significant problem discussed in Phases 2 and 4.

Crowd-sourcing data is another way to get real-time data on U5TA, and Phase 2 indicated this through citizen science. This is important for risk communication to ensure the effective real-time exchange of information in the event of public health emergencies. There could be a public registry or website for reporting unsuitable TA, including documenting property hazards, problems with landlords or service issues. Researchers can also work with the local authorities and families with U5TA to identify areas of concern to co-design surveys and apps, but digital exclusion must be considered (APPENDIX.S7.1,Table Domain I). Families can report how long they have lived in TA, the number of times they moved, and how often they are given short notice. Co-designing with families is vital to help find the balance between families eager to share their experiences, thus improving data collection and respecting those who may feel shame or embarrassed.

Domain II- Quantity and quality of housing
Under this domain, I discuss the quantity and quality of housing, including the community and neighbourhood environment. These findings demonstrate that these environments were below substandard. The UK housing crisis is a contextual issue, an important consideration that anchors the feasibility of the Phase 5 recommendations. In the PhD context, the duration of tenure living in TA (Phases 3-
4) and moving multiple times, i.e., transientness (Phases 1-4), are indicators that there aren’t enough homes and many living situations were not temporary in LBN and beyond. TA is intended for short stays, but there is no stated maximum duration for living in TA. However, for B&B/hostel types, the Homeless (Suitability of Accommodation)(England) Order, Section 3 states that this duration should not exceed six weeks (except when the local authority has no alternatives available) and explicitly proclaims that these accommodations are unsuitable for families.\textsuperscript{433}

Although these TAs were “temporary” by definition, \(\sim98.7\%\) of families exceeded this limit in Phase 3. This may be because there were no houses to place them in, but I couldn’t determine what kind of TA they had or which branch of government supplied it, so different rules may have applied. This was also the case with the under 5s data I was provided from the council (Chapter 2, Table 2.2). Similarly, families and professionals verbally reported that U5TA had been in TA for extended periods.

II.1 Housing Quantity
In Phase 4, all professionals recommended more affordable and suitable housing, the foundational level of Maslow’s Hierarchy of Needs.\textsuperscript{64} Most said housing availability is the primary barrier to optimising health outcomes and priority one from their experience working with U5TA and their families. This finding was supported by the other phase findings based on living duration in TA, moving multiple times and recent reports.\textsuperscript{434,435} \textbf{More housing} is the ideal and what we should \textit{strive} for, but that is a long-term intervention (\(\sim\) five years or more) to end homelessness altogether. This change is needed at the local and national levels because local authorities are restricted by finite resources, both finance and asset-wise. Building more housing is required to keep up with population growth naturally, but unfortunately, more social homes are currently being lost to investors (i.e., demolitions, sales) much faster than the number of new homes built.\textsuperscript{432,436,437} One professional from the local authority stated that many boroughs were outbidding each other for new properties to build housing (Phases 4-5). The lack of available housing and high demand potentially influenced the quality of TA offered to U5TA.

Nevertheless, one solution to ending homelessness already exists—there is enough housing, but it’s not being used. In 2022, Action on Empty Homes estimated that
there are ~250,000 empty homes in England which could be used for housing.\textsuperscript{438,439} In 2021, Newham had 2,246 long-term empty houses (LTEHs).\textsuperscript{439–442} Local authorities and housing offices should use council tax registers to find LTEHs.\textsuperscript{439,441–444} The central government should then ensure local authorities have adequate funds and resources to incentivise property owners to renovate, refurbish, demolish or build in order to let these properties, which may be less expensive than new building homes.\textsuperscript{445,446} Community-based approaches integrating local services have been successful in other local authorities in England and had numerous benefits that may aid U5TA and their families, such as employment opportunities, improved community safety, improved health and well-being and an increased supply of secure affordable housing.\textsuperscript{447} In the US, the “Healthy Neighborhoods, Healthy Families” initiative had an exemplary partnership between a children’s hospital and community development corporation attributed to a diverse set of funding sources.\textsuperscript{448}

England unquestionably has the capacity to end homelessness if compared to the success of other HICs\textsuperscript{41,84,449} and plan accordingly through sustainable development, i.e., meeting present needs without compromising future generations. Family homelessness has significantly declined in Nordic countries over the last decade because of the Housing First approach,\textsuperscript{41,84,449} discussed under Domain V. Over the previous three decades, “\textit{Finland’s success is not the outcome of ‘quick fixes’,}” but by building up a housing supply, converting existing infrastructure, and maintaining sustainable development so that people experiencing homelessness are given permanent accommodation rather than placed in a series of TA and moving multiple times.\textsuperscript{27,449} France developed a five-year plan that mobilised twenty-four regional and local governments in implementing Housing First principles throughout the country.\textsuperscript{41} Some HICs, e.g., Japan, consistently report a low incidence of homelessness each year, to which specific characteristics may be attributable.\textsuperscript{84} However, the data are not comparable because of the differential definitions used, which is again why a universal definition and standardised metrics are needed (Domain I).\textsuperscript{25,41}
II.2 Housing Quality
In this PhD, housing quality was an essential determinant of health. Therefore, as seen in Phases 1-4 (APPENDIX.S7.1, Table Domain II), most variables, highlighted in red, should be prioritised. These findings included a) TA layout and infrastructure, b) HHSRS Hazards, and c) community and neighbourhood environment.

Across all Phases, it was evident that the suitability of TA, an indicator of housing quality, was questionable, especially for U5TA and their families, despite the fact that there are current policies to prevent unsuitable TA in the first place. In the Homelessness Code of Guidance for Local Authorities 2018 (HCGLA), Overview, para.18 states, “accommodation must always be ‘suitable’, and there are particular standards set when private rented accommodation is secured for households which have a priority need.” Moreover, HCGLA explicitly declares “17.4…space and arrangement will be key factors in determining the suitability of accommodation…” and the duty of housing authorities “17.5…to consider carefully the suitability of accommodation for households with particular medical and/or physical needs….” However, these factors appeared to be up to the interpretation of individual local authorities, including LBN. This was not unique to LBN, as documented by many participants in Phase 2 who had been relocated to other boroughs before and during the study and in Phase 4 by several professionals, including HVs with experience working in other London boroughs, supporting this claim.

II.2a TA Layout and Infrastructure
The PhD findings indicated that the heterogeneity of TA layout and infrastructure varied substantially and were often tied to safety issues (Phases 2 and 4). In particular, children with SEND faced greater barriers by not having adequately suited TA for their needs, such as non-accessible or non-conformed space for assistive technology and mobility aids. Most TA also lacked basic household essentials, including safe sleeping provisions for babies and infants separated from parents and older children. During Phase 2, many properties had poor maintenance, and families reportedly experienced difficulty and felt unsupported by landlords and local authorities to make necessary (Priority A) repairs. One participant informed me that they and their two small children had been waiting more than a month to have
their boiler repaired that Winter. These findings were also consistent with more recent research reports in England,\textsuperscript{434,451} demonstrating that these aren’t unique to East London.\textsuperscript{434}

\textit{II.2b HHSRS Hazards}

As seen through the photo evidence and the methodological triangulation in Phase 2 and data collected in the other phases (APPENDIX.S7.1, Table Domain II), most HHSRS hazards were present in TA.\textsuperscript{9,15,17,22,25} Some hazards were caused and compounded by other hazards. For example, a broken boiler or inadequate bathroom facilities caused dampness/mould, which most TA properties had present. Furthermore, hazards and associated risks for U5TA were heightened by the lack of baby/childproofing of the properties. However, the current system for assigning risk to these hazards, i.e., Category 1, 2, and so forth, is very complicated, especially for the general public to understand. As such, I recommend designing an accessible format for the general public use to determine HHSRS hazards in their TA and their risk (e.g., binary risk yes/no). Individuals can then have more of a voice in unsuitable housing and take more control to advocate for themselves. See APPENDIX.S7.2, TA Standards Framework, for specific recommendations. The current system has been under review and is considering “the merits of a standalone damp and mould standard”\textsuperscript{112}, but it is not well-publicised and may not have the expertise of families with U5TA.\textsuperscript{11} A thorough review of all current housing policies is required, which was suggested by the professionals.

\textit{II.2c Community and Neighbourhood Environment}

Many families were placed in TA out-of-borough/out-of-area, which consistently uprooted and changed their community and neighbourhood environment. These placements were common due to housing shortages, as found in Phases 1-2 and 4. One participant in Phase 2 withdrew from the study because of out-of-area placement, while others had been moved to different boroughs during the study. Backed by the literature, professionals also reported that families were placed out-

\textsuperscript{5} This thesis was submitted on 12\textsuperscript{th} June 2023 and the viva voce was passed on 24\textsuperscript{th} July 2023. On 7\textsuperscript{th} September 2023, the central government later published “guidance” on “Understanding and addressing the health risks of damp and mould in the home”\textsuperscript{492} in response to the death of two-year-old Awaab Ishak.\textsuperscript{112}
of-area, causing several issues for those families, including feelings of isolation and poor mental health because families were continuously starting over and alienated from support networks and communities with similar cultural backgrounds.\textsuperscript{205,230} Similarly, when families moved so frequently, there was an unawareness of government services and greater reliance on community resources.(APPENDIX.S7.1,Table Domain II)

In the neighbourhood and community environment, charities, food banks, community centres, and children’s centres were facilitators. These provided numerous health benefits, including support and safe spaces to escape their TA environment. For example, in Phase 2, Magpie served as an important community hub and supportive environment for health\textsuperscript{28} for many families to have a warm meal and socialise with parents in similar circumstances as well as pick up essentials (e.g., nappies, clothes, canned goods), which explained why it was the most visited resource during their data collection. Many families accessed the charity even when placed in TA outside LBN. However, COVID disrupted these families’ way of life as they relied on community-based services and such venues were closed during lockdowns (Phases 2-4).\textsuperscript{15,22} According to professionals, barriers had a snowball effect: some enforced local or independent policies in TA (systems-level barriers) created challenges in co-parenting or receiving support from family or friends (community level) because of the strict no-guest policies, which often trickled down to the individual/family level (e.g., poor mental health) and even further isolation for families.

Domain III – Impact on health for U5TA and parents/carers
My mixed-methods data demonstrated homelessness is a public health challenge and how housing is undoubtedly health care,\textsuperscript{12} further supporting the inclusion of TA as an ACE described in Domain I. Across Phases 1-4, the bi-directional relationship between health, especially mental health, and housing status was consistent with other research findings.\textsuperscript{14,25,373} This thesis supports previous evidence that there are many short-term impacts in the early years and long-term impacts potentially across the life course for U5TA (Figure 7.2)\textsuperscript{14,25} and confirms that the TA and poor housing environments are predictors of morbidity.\textsuperscript{373,374} The first five years are crucial,\textsuperscript{1,29,30,55} so some children are spending most of these vital early years of life in these
suboptimal environments, with some children even born into them, impacting their health and development. Some children remained in TA for well over a year, so some impacts were especially not ‘short term’. (Table 2.2 and APPENDIX.S5.2 [Phase 3])

Each phase validated the prior phase findings. In Phases 2 and 4, participants discussed how housing and health services need to work closer together. Better communication and policies are required between the health and housing sectors: health and the environment, in this case, housing, go hand in hand and shouldn’t be treated as entirely separate entities. There needs to be more cross-sector unity for families in TA, which fits under the Housing First approach recommended in Domain V.1b.

**Under 5s: Milestones and Child Development**

Not only did U5TA have more barriers to optimising health outcomes (e.g. poor housing environment, food insecurity) than those not living in TA, as demonstrated in Phases 1 and 3. They were also reported as not meeting crucial developmental milestones, including fine and gross motor skills, compared to their stable-housed counterparts from the professionals' perception (Phase 4). According to professionals, this was the case pre-pandemic, and the pandemic had indeed widened these health disparities by exacerbating the pre-existing barriers. In Phase 2, the negative impact on health outcomes was also a concern raised by families and shown through citizen science: the TA physical environment was not conducive to positive play or any of the physical activity recommendations outlined in the Let’s Be Active Campaign (Chapter 1). These data further support TA as an ACE (Domain I) because HVs and HPs observed detrimental impacts on child development. Evidence shows that ACEs, including homelessness, have negatively affected childhood neurodevelopment and behavioural conditions, including autism, learning disability, and attention deficit hyperactivity disorder. Furthermore, indoor living environments and barriers to housing and services are known as the most important predictors of child-heightened morbidity across England. Figure 7.2 shows these data support that evidence base.
Figure 7.2 Short-term vs. Long-term Impact of Homelessness on Under 5s Living in Temporary Accommodation.  

**SHORT-TERM IMPACTS**

- Impede fetal growth
- Brain development
- Low birthweight
- Impaired mental behaviour and motor function
- Micronutrient deficiency e.g. Vit D, Iron
- Weakened immune system
- Increased risk of exposure and transmission of infectious diseases
- Dental caries
- Disability
- Morbidity
- Increased risk of premature death

**LONG-TERM IMPACTS**

- Cognitive & educational performance
  - Lower IQ
  - Smaller stature
  - Stunting
- Reduced muscle and body mass
- Lost economic productivity
- Increased health care costs
- Poverty and/or homelessness
- Increased risk of obesity, heart disease, hypertension stroke, diabetes, cancer
- Premature death

Note: These data are based on findings from Phases 1-4.

**Mental Health**

Across all phases, living in TA had adversely affected parents/carers, consequently making U5TA more susceptible to experiencing ACEs and barriers to optimising health outcomes and accessing health care services. More specifically, this thesis provides extensive evidence that TA and poor housing environments predict poor parental mental health, depression and anxiety, self-reported in Phase 3 and Phase 4 from the professionals' perspective. This further supports how homelessness and mental health are intrinsically linked, which has been found in other studies, including an association between childhood behavioural risks and parental mental health disorders in homeless populations. In more than one-third of the articles in Phase 1, parental mental health was a characteristic of the barriers described for under 5s. Phase 3 findings were consistent with Cutts et al. (2018), who reported that mothers with a history of homelessness had higher adjusted odds of screening...
positive for depressive symptoms (2.98; CI 2.30, 3.86; p<0.01) compared to those consistently housed in the US.\textsuperscript{218}

Parental mental health, which reportedly moved downstream to the child’s mental health, was interrelated with the most perceived barriers (Phase 4).\textsuperscript{22} This is sensible because ACEs are also interrelated: reporting one ACE increases the likelihood of reporting at least one more.\textsuperscript{426} Therefore, I recommend co-developing\textsuperscript{23,453} a mental health agenda for U5TA and their families, including targeted and tailored community-based mental health strategies and partnerships such as the co-location of mental health and housing support within settings already accessed by families, especially in resource-poor neighbourhoods. Investing in mobile health units (MHUs) can conveniently bring multiple services to their neighbourhoods simultaneously. These have been successful in Canada, where there is also universal health insurance. Still, MHUs have been preferred by “homeless and marginally housed adults” as their usual source of health care and for obtaining essentials like vitamins and socks.\textsuperscript{454} Based on the professionals’ feedback, special attention should be given to developing coping skills, especially among children with SEND who may struggle with change. Trauma-informed approaches to homeless services,\textsuperscript{455} healthcare and social care, should also be utilised with more sensitivity in working with families, especially with experiences of domestic abuse and refugees and asylum seekers. Access is key, and thus, standardising mental health services with practices from evidence-based interventions and service models\textsuperscript{455} across England and training for health providers is vital.

**Domain IV- Difficulties in accessing health care services**

Numerous barriers and fewer facilitators were found to accessing health care services among U5TA and their families across the 5A’s of access: affordability, accessibility, availability, accommodation, and acceptability,\textsuperscript{5,114,115} many of which were also interrelated. Similar to homelessness, there is also no universally accepted definition of access to health services.\textsuperscript{456,457} I chose the 5A’s approach to demonstrate that the complexity of health care access is dependent on different variables. As described, many are interrelated and essentially, these findings fit
under more than one “A”; therefore, one can draw a connection that these barriers are co-dependent and not mutually exclusive. Some scholars name these categories slightly different but ultimately describe the same variables together and how these interact with a patient’s ability to perceive, seek, reach, pay, and engage. As described in the concept map (Chapter 2), the results have supported that U5TA can’t be viewed in complete isolation from their parents/carers since U5TA are not navigating relationships and services, but rather their parents/carers must make decisions for them.

Acceptability
All Domain IV findings, except SEND accessibility (due to a NA in Phase 3), are highlighted in red (APPENDIX.S7.1, Table Domain IV), showing that these are all first priorities. According to current policies, some of these barriers shouldn’t have been there in the first place. For example, the difficulties of registering with a GP, a common theme in the professional interviews (Phase 4) since GP surgeries are the gatekeepers to other health services in England, has also been well documented in homeless populations as an issue of acceptability, i.e., professional values as well as accommodation. Throughout the thesis, proof of address and immigration status (NRPF) were barriers to GP registration for U5TA on the local and national levels. Although according to the British Medical Association, GPs can’t refuse registration on the grounds of insufficient evidence on either factor—GPs are health providers who have sworn the Hippocratic Oath and are not housing or immigration officers. Professionals reported that these barriers made U5TA and their families heavily rely on secondary care services (e.g., A&E) as their primary source of health care. This was also confirmed by reports in Phase 2. Further investigation is needed regarding why this barrier persists among homeless populations (Phase 1) and how to track any violations of the current policies. A recommendation is that families or someone on their behalf can report to the local authority which surgeries are making it difficult to deregister/register with a GP when they move or even turn away families for NRPF status.
Affordability
The most common affordability barriers were 1) competing priorities or opportunity costs; 2) costs for transportation to health resources, e.g., children’s centres; 3) financial and food insecurity, including the ability to afford prescribed or over-the-counter medications and baby formula on top of other essentials on a weekly budget with benefits if applicable. Many of these barriers arose when families received out-of-area or out-of-borough placements, geographically displacing them away from vital resources, which were not limited to health services alone, but also schools, children’s centres, charities, food banks and more. Using Phase 2 as a template, a spatial analysis and needs assessments can place families in more convenient neighbourhoods. In addition, key decision makers should consider co-location of services, including housing, in one location would also help reduce these burdens on families or provide total compensation for transport (APPENDIX.S7.2,TA Standards Framework). SEP is a known key determinant in whether families can access certain services, and although I could not determine why families did not access services in Phase 3, ~60% had a household income ≤ £5,200-10,399.

Accessibility
Accessibility pertained to the geographic location of the services and the facilities themselves for SEND, which was also an accommodation issue. From observation in Phase 2, it was plausible that U5TA and their families had to travel further (i.e., social distance) to access one of these facilities with these accommodations (e.g., ramps, wheelchair access, drop-in hours). Some professionals and I suggest that when a family moves to a new area, it would be helpful to provide those families with a map of the health services in the local area with their contact information. Furthermore, paediatricians should try to optimise each visit to reduce the number of visits, i.e., the financial burden of attending multiple separate appointments such as check-ups, immunisation, etc.

Accommodation
Barriers to accommodation included online appointment systems when there was digital exclusion and/or by telephone with linguistic differences. Even pre-pandemic, digital poverty was apparent in Phase 2: the lack of Wi-Fi in TA and/or funds to purchase phone credit to access services or only having one phone to sort one issue
at a time (i.e., housing) for the entire household i.e. adults, teenagers. These inequities were validated in Phases 3-4. According to participants in Phases 2 and 4, community facilitators and interpreters were of vital importance when provided and/or available. The lack of interpreters when needed and translated health materials requires cross-sector cooperation and could also provide more employment and training opportunities for bilingual parents/carers in LBN, some of whom may be of the ~80% unemployed in Phase 3. In Phase 2, the mothers said they felt unconfident and wanted translated health materials on immunisations and materials in less health-literate terminology, including brochures. They also described being rushed through appointments without the GP listening to them or getting their questions answered. Therefore, I recommend co-produced policies, interventions and strategies piloted with families living in TA to ensure quality care and ease of navigating and accessing physical and mental health services, which are feasible and culturally acceptable.

**Availability**

*Availability* pertained to the HCP and supply/demand-side aspects, e.g., health resources such as appointment availability, difficulty getting referrals, increased workload for professionals, and continuity of care and support.

Professionals articulated that many HV services were more overstretched beyond capacity during the pandemic, requiring government funds to be allocated to hiring more HVs in LBN. This could have a significant impact in *the short term*, but this is still a top-down approach at the systems level, as rightfully pointed out by HP4, requiring changes to budget allocation. In Phase 3, more than double percentwise of households in TA did not access antenatal services. However, some services were accessed irrespective of housing status (e.g. immunisations), which should be interpreted with caution because the sample of families in non-TA was not representative of LBN and the survey limitations as stated in Chapter 5.

Continuity of care and support, including "*the timely use of service according to need*," was a priority issue and has also been documented among families living in TA in Bromley. HVs discussed the difficulties of knowing if a child has moved out of or into their area and knowing who is geographically responsible for
delivering care during transitional periods (i.e. U5TA had yet to register with a new GP). To improve continuity of care, some HVs in Phase 4 advised implementing a centralised tracking system or registrar for U5TA so they are not invisible to services during transitional periods, which I also recommend. More specifically, I recommend better use of parent-held records and an integrated case management system with a coordinated care approach (e.g., health and housing) across different sectors and boroughs to coordinate support for U5TA and their families. Care-coordinated models have been shown to be effective and essential tools for health providers to better serve the needs of people experiencing homelessness, such as all-inclusive services under one roof, i.e., primary and speciality care, mental health, and addiction treatment. Similarly, one professional (LA3) recommended developing targeted and better care models, especially public health service outreach (PHSO) for families in TA and hidden homelessness, not just those successful for rough sleepers. PHSO refers to “bringing health care to homeless populations” in places commonly congregated to access services other than where they go for health care (e.g. shelters, foodbanks, community centres, charities). I had this thought from the beginning of the PhD, and this was initially intended for the complete co-production process in Phase 5 involving families with U5TA as well as those in the following groups: NRPF status, non-UK born, low-income households and from a representative mix of ethnic groups. This re-orientation of health services is part of capacity building and investing in community child health.

Domain V- Implementation of current policy and lack of relevant policy (i.e., TA Standards Framework)
In this PhD, intersectionality was a key component of inequalities and inequities experienced by U5TA in their efforts to access safe and stable housing and health care services, which had short- and long-term health implications. Several local and national policies (APPENDIX.S7.1, Table Domain V) affected U5TA and their families, although no policies were specific to U5TA. In Domain V, I discuss current policy gaps with the proposed TA Standards Framework, Housing First as a national model, and revisit the Children Act (Chapter 1) and what policy amendments are recommended.
V.1 Housing Policies

In **Phase 4**, professionals recommended clearer, unambiguous guidance on what is deemed “suitable” accommodation and fit for human habitation with greater accountability for inadequate housing. This recommendation was also an implication in previous phases and synergistic with the UN OHCHR key elements (*Chapter 1*). Based on the thesis findings, many of these elements were unmet. For example, the Homelessness (Suitability of Accommodation) (England) Order 2012 outlines “*Matters to be taken into account in determining whether accommodation is suitable for a Person*” and “*Circumstances in which accommodation is not to be regarded as suitable for a person.*” So, although suitability is covered extensively in the current policies for the council’s housing office and some for the Home Office, there are no policies to ensure these are operational in reality and hold the government responsible. As such, I developed an evidence-based **TA Standards Framework (V.1a)**, which references the current policies (**APPENDIX.S7.2**) and recommends Housing First (**V.1b**).

V.1a TA Standards Framework

No policies currently cover all TA types but are instead segregated by the government division providing the TA. Furthermore, these policies don’t address the health and wellbeing of U5TA. Although the long-term solution is to build more social housing that is affordable and suitable to end homelessness, the first-line response and short-term solution are to address the suitability of TA and develop a national TA framework in England for local-level implementation. The **Temporary Accommodation (TA) Standards Framework** is a proposed national benchmark that local authorities can use to tailor into their own frameworks and implement to ensure all TA meets better minimum standards to protect the safety, health and wellbeing of USTA. This benchmark is recommended as good practice and meant to cover all TA provided by the government in England: Local Authority, Social Care, and Home Office. All TA types should be included because in **Phase 3**, ~24% of families had NRPF status, meaning the Home Office provided their TA.

The lack of clear and enforceable standards may amplify the root of the problem—the lack of suitable housing. The framework is meant to empower local authorities to determine which standards are feasible, which may then pressure the national level
to assist local authorities with acquiring and allocating suitable housing instead of simply forcing stricter and stricter regulations, thereby reducing the number of properties with no alternatives. It is also a clear accountability framework requiring appropriate leadership for a collective impact.\textsuperscript{464} Capacity building and infrastructure for health promotion are vital, relying on effective governance for health,\textsuperscript{28} to ensure adequate funding and resource allocation at the local level.

I first developed the \textbf{TA Standards Framework} in 2021 with U5TA and their families at the forefront of this design. By reflecting on the UN OHCHR \textit{right to adequate housing}\textsuperscript{111} and Ottawa Charter,\textsuperscript{465} the framework was centred around creating infrastructures for health promotion, life skills, and quality of life, minimising risk factors and behaviours for poor outcomes and service access. A systematic process was used to triangulate the data across each study phase (\textit{APPENDIX.S7.1,Table Domains}) to make recommendations and design the framework. By triangulating mixed-methods evidence, policy gaps analysis, and recommendations from families in TA and professionals, six key issues to address emerged in the creation of a comprehensive framework. These \textbf{six key issues} are: 1) poor maintenance, 2) lack of basic household goods/services, 3) accessibility issues, 4) sense of “unsafety”, 5) feeling unsupported, and 6) suitability. The standards are intentionally explicit, e.g. step-by-step case examples, because professionals discussed the need for policies to be more specific, as there are discrepancies between “regulations” and “guidance”. Likewise, the families also articulated particular issues about the TA environment that needed to be addressed on a policy level.

Shortly after completing the original framework, I was informed in July 2022 that an All-Party Parliamentary Group (APPG) named “Households in Temporary Accommodation,\textsuperscript{434} was also working on something similar. I contacted them to collaborate because I felt it was important to join efforts rather than duplicate them, knowing each professional and interested party brought their own area of expertise and added value. This framework had national-level implications, and it was only right to use my findings in this way to help more families with the most meaningful impact. I collaborated with The Shared Health Foundation on the APPG report\textsuperscript{466}
and, as they requested, adjusted the organisation of my framework to match the headings of their report.

Some recommended standards are already current policies and legal requirements, but some don’t exist at all, e.g., Social Care does not have a suitability order. However, some were not strictly enforced or operating as intended in some boroughs, which appeared evident in this thesis. Some policies were also subject to interpretation or dependent on the local authority’s finite resources. See **APPENDIX.S7.2** for the complete framework and recommended enforcement action, e.g., sanctions and pathways for making formal complaints.

Feasibility and acceptability are essential to successful implementation, so I partnered with the LBN local authority. This collaborative work, specifically with the LBN Public Health and Housing Teams, involved meetings, knowledge exchange, civil discord, and policy debates. **Figure 7.3** shows the process of creating the TA Standards Framework with feedback from these teams and tailoring it to LBN. The LBN framework will be co-developed and comprised of the standards which the teams and council leads are currently ranking “Very Easy”, “Easy”, and “Neither Easy nor Difficult” to implement in theory.” **Table 7.2** describes each framework. An evaluation and monitoring plan will also be co-developed with LBN to ensure its implementability and impact.

We also met with DLUHC, who were supportive of this work and provided feedback suggesting that if this framework could be implemented at the local level in LBN, the borough that has the highest rate of homelessness and highest number of children in TA, then it would certainly be plausible in other London boroughs and across the nation. As of 25 May 2023, the Scottish Government is still drafting their own national TA Standards Framework, which is not publicly available, but I hope this proposed one for England will be complimentary and share some features to address similar concerns. As acknowledged before, these frameworks are not

**Note:** In **August 2023**, the LBN Housing Team determined and then informed me they did not have the capacity/resources to continue this ranking process during feasibility testing and, therefore, move forward with the framework. This was after my thesis was submitted on **12th June 2023**, and I passed my viva voce on **24th July 2023**.
failproof with their own limitations and might appear as a band-aid to the larger issue of unavailable suitable housing. Therefore, a framework would be more effective within a wider strategy which considers holistically how to reduce the risks to U5TA.

Table 7.2 Comparison between Evidence-Based TA Standards Framework and LBN Framework

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<th>Framework</th>
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| Evidence-Based Proposed as National Benchmark  | Complete  | A proposed national benchmark that local authorities can use to tailor into their own frameworks to implement and ensure all TA meets better minimum standards to protect the safety, health and wellbeing of U5TA. This benchmark is meant to cover all types of TA, including TA provided by the government: Local Authority, Social Care, and Home Office. | • Triangulation of Phases 1-4 Results  
• Recommendations from families with U5TA AND cross-sector professionals  
• Feedback from Local Authority (especially Housing, who were not interviewed in Phase 4) |
| LBN                                            | In Progress| Using the evidence-based framework as a benchmark, the LBN framework will be derived using the results from the feasibility testing. This framework will be co-developed. | • Feasibility results of each standard using benchmark, which can be tailored accordingly.  
• Input from Local Authority from each department.  
• Co-development                                      |

Figure 7.3 Process Diagram from Triangulation to Implementation at Local Level
V.1b Housing First

As discussed in Domain II, current housing policies were not enforced or adequately implemented, whereas other HICs successfully used the Housing First model to reduce homelessness for individuals and families.\footnote{471} The thesis recommendations are aligned with Housing First Principles and its evidence-based, bottom-up approach\footnote{472} to service delivery where traditional, top-down approaches have failed.\footnote{473–476} Housing First prioritises the provision of permanent housing to people experiencing homelessness with the notion that this improves the quality of life because by ending homelessness, people have fewer competing priorities and physiological needs (i.e., Maslow’s Hierarchy of Needs)\footnote{64} allowing them to focus on their health and wellbeing.\footnote{477} Furthermore, Housing First removes barriers to acquiring permanent housing by not requiring prerequisites such as the fulfilment of the substance misuse programme.\footnote{477} Evidence also demonstrates that family homelessness is mostly an economic problem, which can be resolved by long-term rent subsidies rather than a psychosocial problem that families must address to succeed in housing.\footnote{478} In 2021, 3 US states and 82 communities/districts nationwide achieved net zero veteran homelessness using the Housing First approach and cut veteran homelessness by 50% over the last decade.\footnote{479} Housing First projects exist in England but are not funded to be at scale nationally;\footnote{475} the key to the success of this working nationwide for England is robust funding, no barriers to accessing health care services, and strong leadership.\footnote{479}

V.2 Children Act 1989, 2004

In Chapter 1, I discussed the Children Act, Section 17 in particular, as it applied to all children to ensure they are safeguarded and their welfare is protected and best cared for by their families.\footnote{98,99} There is currently no policy specific to U5TA; on the other hand, substantial coverage for looked after children is available. As such, I recommend that the policies be amended so that U5TA and any under 5 threatened with or experiencing homelessness have the same level of protection as looked after children:

“1.1. Looked after children deserve the best experiences in life, from excellent parenting which promotes good health and educational attainment, to a wide range of opportunities to develop their talents and skills in order to have an
enjoyable childhood and successful adult life. Stable placements, good health and support during transition are all essential elements, but children will only achieve their potential through the ambition and high expectation of all those involved in their lives.”

The health and well-being standard, Regulation 10, is also meant for looked after children but could be amended to U5TA:

“(1) The health and well-being standard is that— (a) the health and well-being needs of children are met; (b) children receive advice, services and support in relation to their health and well-being; and (c) children are helped to lead healthy lifestyles.”

The above statement and standard should be applied to U5TA to ensure the best start in life; however, it is essential to clarify the conditions or exceptions when these are not being met. Based on the barriers found, the blame can’t fall solely on the parent/carer if they can’t register with a GP or access to “…dental, medical, nursing, psychiatric and psychological advice, treatment and other services as the child may require.” Families often have to register with different GPs as they move from borough to borough or out of London. Still, sometimes there is a gap in service between the time they deregister from the previous GP and register with a new one, and by that point, the family may have moved again. U5TA must always have access to a GP, regardless of their registration status.

Similarly, an amendment is needed to Section 20 to have a clause about unsuitable accommodation provided by the council. The fault should not lie with the parent/carer if the TA provided is unsuitable for the child. As seen in this thesis, the Act should also have further amendments to protect U5TA with SEND, who are even more vulnerable. These amended sections must ensure that children with SEND have equal and equitable rights as other children. The suggested amendments are even more vital as children experiencing homelessness and poverty have grown more vulnerable during the pandemic.
Domain VI- Impact of COVID-19 on this priority population

Using my findings, I discuss 1) how to ensure better emergency preparedness for future pandemics and 2) how to reduce the pandemic effect on the current generation of U5TA. The COVID-19 pandemic perceivably widened the health inequalities and inequities among U5TA by exacerbating pre-existing systemic and systematic barriers.\textsuperscript{13,22} Although accurate for reducing the spread of COVID-19, many national mandates and guidelines were not feasible, if not impossible, for some U5TA during the pandemic within their family and housing environments, such as social distancing.\textsuperscript{13} COVID-19 also impacted professionals across different sectors and their perceived ability to reach families and deliver quality care.\textsuperscript{22}

As discussed in Domain IV, digital exclusion was a challenge for everyone, but digital poverty existed before the pandemic for U5TA and their families, which had many secondary effects, as discussed in Chapters 5-6. The lack of Wi-Fi in TA properties was very common and more prevalent than in non-TA households (Phases 3-4).\textsuperscript{15,21,22} During the pandemic, digital poverty and exclusion became exacerbated as many families couldn’t access services when needed or had language barriers preventing them from using online intake or automated phone systems in English (Phase 4).\textsuperscript{22} This is consistent with other reports\textsuperscript{434} although FEANTSA might argue that some homeless populations are not digitally excluded \textit{per se} but have many other barriers depending on their socio-demographics.\textsuperscript{482} In this case, Phase 2 showed that many families did not have mobile phones (or phone credit) and/or Wi-Fi access pre-pandemic, so digital exclusion may indeed be accurate.

Emergency preparedness is vital, and the government should learn from the successes and failures across the globe to inform their planning and preparation to prevent the same disparities from happening to U5TA in the future. A health in all policies (HiAP) approach\textsuperscript{28} could be used to inform emergency preparedness and protocols. Co-produced recommendations with U5TA and families who have great insight and experience from the pandemic could help navigate some issues they faced, so local authorities can determine what essentials are still needed and what key issues remain to reduce the pandemic effect. In addition, a HiAP approach has
been effective and well-documented in other homeless populations in HIC settings and LMICs.\textsuperscript{18,483} This includes contingency plans and protocols for future lockdowns and pandemics, such as training for all health personnel and ensuring digital access at all TA properties considering the remote delivery of vital services (e.g., housing, health care, immigration, etc.), which might be inevitable. It is imperative that families have digital access now that many vital health services and schooling are online, even some exclusively. This also applies to large electrical appliances in good working order in TA to prepare and store food, given the high prevalence of food insecurity among this population (Phase 1-4).

Several systemic, structural problems existed through various sectors acting separately rather than in an integrated system. Integrated case management with a coordinated care approach was recommended by professionals in Phase 4 but supported by professionals in other HICs like the US.\textsuperscript{373,484,485} This would help families and professionals care for and support U5TA using a public record/directory for all local authorities and NHS staff, which is not readily accessible.\textsuperscript{486} Different sectors and partnerships working together only co-benefit the other while delivering quality services. Professionals gave many examples of adult health services (e.g., cancer screenings, dental check-ups) which were already being delivered in the London area via MHUs, but no services specific to U5TA. Comprehensive PHSO should be developed and tailored to U5TA to ensure no one is left behind and reduce the pandemic effect on the current generation of U5TA. Outreach includes, but is not limited to, MHUs to bring a range of services (e.g., immunisation, dental checks, child health reviews, etc.) to families and their neighbourhoods and housing. As mentioned earlier, co-location of services in one location already accessed by U5TA and their families would reach more families and help mitigate the barriers, including opportunity costs and ameliorate some of the direct and indirect impacts of digital poverty. In Phase 3, a greater proportion of families living in TA were unable to access a midwife when needed compared to households in non-TA. These families were not “hard to reach”; they had many competing priorities, with their fundamental needs being safe, suitable, and stable housing.
7.4 Strengths, Limitations and Challenges
7.4.1. Strengths
In this thesis, there were various strengths across Phases 1-5. To my knowledge, this thesis included the first study worldwide using citizen science with U5TA and their mothers (Phase 2)\(^9\) and the first study on U5TA exclusively during the pandemic conducted in England (Phases 3-4).\(^{15,22,23}\) Using different methodologies in each phase with triangulation across phases facilitated a better picture to meet the aims and objectives and support the hypotheses. Triangulating the findings across Phases 1-4 by the presence or absence of findings increased the validity and strength of the recommendations made in Phase 5 (APPENDIX.S7.1). Phase 2 advanced the inclusivity of the health field by enabling all identified hazards in the housing environment to be seen through the lens of those living there and experiencing them firsthand.\(^9\) The qualitative approach in Phase 4 was complementary to the work done in Phase 2, where experts with lived experience of homelessness candidly described the socio-political barriers they encountered in different environments, while Phase 3 was a larger quantitative survey of families in TA during the pandemic. In comparison, Phase 4 looked at this lived experience from a different but complementary angle, i.e., how professionals perceived those experiences of U5TA and what multi-level barriers they faced when providing U5TA services. Therefore, across the phases, I observed unique periods of time in this population (U5TA) with different participants from each point of view—families and professionals—in different settings to provide a balanced picture of the health inequalities and inequities experienced by this vulnerable group.

The research was conducted in LBN with families and professionals who both had experiences with TA outside the borough. Thus, some findings may be generalisable outside LBN, but a more extensive geographical representative national-scale study is still needed. This thesis produced numerous outputs, including the evidenced-based TA Standards Framework as a proposed national benchmark which can be tailored to each local authority for local-level implementation, uniting health care and housing needs together. A systematic and collaborative process was used to develop the framework to ensure all TA provided by the government meets better minimum standards to protect the safety, health and wellbeing of U5TA especially...
given the time they spend living in TA. This framework has garnered external interest, including DLUHC. The preliminary findings also led to a national study funded by UKRI that I initiated and conceptualised with the support of my supervisors and other academics. This thesis collected data but was policy-informing, utilising the mixed-methods evidence gathered and working with the LBN Local Authority.

7.4.2. Limitations and Challenges
This thesis had limitations and challenges. One of the biggest challenges and disappointments was that I did not do the PhD I had intended due to the pandemic and extraneous factors (APPENDIX.S2). Phase 2 ended early, and I lost my study sample, who would have continued in Phase 3. Challenges included working with families due to digital poverty, competing priorities, and time/availability. In Phase 4, recruiting professionals was incredibly challenging during the pandemic because of their increased workload and demand, even while working remotely. I couldn’t get representation from the LBN housing office, which would have provided important insight, but they declined all interviews. Due to financial restrictions and feasibility, the sample sizes were small in Phases 2 and 4. I didn’t complete the planned public engagement work, a vital component of this PhD and part of my public engagement training at UCL. See APPENDIX Public Engagement.3 for photos of the project in progress before the pandemic.

In Phase 3, I used data from a survey that I had not designed and was not intended for families in TA or experiencing homelessness. However, I obtained socio-demographic data in Phase 3 as a substitute for the data not shared in Phase 2. I couldn’t use the original surveys I had designed with standardised and validated metrics (APPENDIX.S2.5), tested for feasibility and acceptability among mothers of U5TA in Phase 2. Nor could I use data from the survey I created for that specific population in the UKRI study,20 which included comparable metrics to other studies involving individuals and families in TA. Therefore, this affected the generalisability of the findings, which would have included local- and national-level results on U5TA and their families for comparison. Using the Statutory Homelessness data,168 families living in TA from the sample in Phase 3 were representative of families
living in TA in LBN by ethnicity and habitation status (i.e. single-parent or cohabited households with children) and England by habitation status. This difference was unsurprising because LBN was the country’s most ethnically diverse local authority in the 2021 Census.\textsuperscript{487} The other variables included in the representativeness analysis did not have matching variables in the Statutory Homelessness data sets, so census data was used. However, in the 2021 Census, TA was not a housing category, and the only mention of “temporary” as it related to housing was “*a temporary or mobile structure, such as a caravan*.\textsuperscript{488} Thus, I couldn’t determine whether the results were generalisable by families living in TA in either LBN or England.

Inconsistent definitions of TA were also a general problem (Phase 1), including in this PhD. When solely responsible for data capture, I could clearly define TA (Phases 2 and 4). In Phase 3, where I undertook data analysis with the collaborators’ survey design (Phase 3), there was no clear definition of TA given to respondents, so it was up to their interpretation, e.g. any TA provided by a government branch or sofa surfing. In my original surveys and the ones I designed for the UKRI study\textsuperscript{20} to use in my PhD, I had questions on the type of TA the participant lived in, housing history and pathways to homelessness, which would have added significantly to the PhD and evidence base. Furthermore, inconsistent definitions of homelessness across the literature and reports were also a challenging as well as frustrating issue, which demonstrated the significant need for better data collection.\textsuperscript{489}

7.5 Future Research and Concluding Remarks
7.5.1. Future Research
As shown in Phase 1, the lack of standardised measures makes comparisons across timeframes, locations, populations and policies exceptionally difficult. Therefore, future studies should adopt a standardised toolkit to measure the health and well-being of families experiencing homelessness, including children and all household members, to compare the results across studies. These studies were also not participatory in nature and may miss out on important insights by failing to draw on the expertise of affected families or experts by experience.\textsuperscript{9,14,20,25,453} Better
data collection includes using standardised definitions of homelessness and TA when determining the inclusion criteria and writing up results, ensuring comparability, representativeness, and generalisability across studies. Likewise, researchers should check national and global survey databases and use all questions required in a set for a composite score, e.g., USDA food security, to ensure accuracy and precision for determining risk.

As seen in Phase 2, citizen science is a powerful visual lens, which future studies should continue to utilise, and co-production with experts with lived experience, ensures their inclusion. Based on difficulties reported by participants about the survey, future public health citizen science studies should consider all factors—accessibility, functionality, and usability—when developing the protocol and choosing the best mobile app for data collection.⁹ Lastly, studies using citizen science approaches should consider data collection occurring over an extended period and with participants taking an active role in data collection and disseminating results, including policy recommendations.

Based on Phase 3, upcoming studies should consider a deeper exploration into the relationships among TA, living duration, parental mental health and other risk factors using mediation analysis (DAG figure, APPENDIX.S5.6). Phase 3 was also conducted at such a time that some participants may have experienced two lockdowns (26th March 2020 and 5th November 2020),³⁶⁰ and more to follow. Future studies should investigate the short-term and long-term implications of experiencing homelessness among U5TA and their families with longitudinal or multi-phase studies with follow-ups (e.g., baseline, 3-6 months). This is paramount to address their short-term and long-term needs once lockdown periods end and there is an effort to return to "normalcy". Furthermore, use nationally geographic representative samples to quantify the morbidity and mortality burden of living in TA, including data on health care services accessed by parents/carers, such as mental health. Using the same study design, Phase 4 should be continued in other UK regions and countries with comparable rates of homelessness and similar geographic distributions of homelessness (i.e., higher prevalence in cities), such as the US.
Lastly, researchers should create a contingency plan when working with this highly vulnerable and transient population, including in the event of another epidemic or pandemic.

7.5.2. Concluding Remarks
When I reflect on the journey of completing this thesis, the first thing that comes to mind is what I would ask my speech-to-text software when I don’t know where to start: “What can I say?” Despite the many challenges and barriers I have endured, I was determined to finish this PhD, not just for me, but for all U5TA and children experiencing homelessness to be a voice for them when they have been invisible, for all students with disabilities and chronic health conditions who have struggled through adversity and discrimination and did not finish their studies, but also for members of my support system who believed in me even in my moments of pain, doubt, or imposter syndrome.

Quite simply, as Cross et al. (2022) put it: “Having a secure, safe and affordable home is an essential element in the experience of a ‘good enough’ childhood.”

However, the ongoing national housing crisis denies many children this “good enough” childhood and impacts their health and development, which this PhD has shown. As said before, the early years are a short yet vital period to ensure the next generation has the best start in life. U5TA were rarely studied as an exclusive group in England primarily due to inconsistent definitions of homelessness or lack of age-stratification, leaving a wide evidence gap and alienating development during the early years from the literature, which this thesis filled by using mixed methods and working with a range of interested parties.

There is an urgent need to prevent the COVID-19 pandemic from becoming a ‘child rights problem.’ U5TA can’t be invisible casualties of the pandemic. Therefore, we should adopt a Child Rights-based Approach. Key recommendations include a national registry to track U5TA; coordinated care and integrated case management addressing the 5A’s of access; a comprehensive mental health agenda tailored to U5TA and their families, e.g. trauma-informed services; the evidence-based TA Standards Framework to improve the living conditions of TA and address HHSRS
hazards; extend Housing First at national scale and action on LTEHs; and emergency preparedness and strategies to minimise the impact of the pandemic already experienced by the current cohort of U5TA. We must work together across sectors with their families to bridge the inequality and inequity gaps. Although advocating for and researching with families living in TA has sometimes felt to me like taking on a Goliath-size problem, these truisms have kept me mindful and centred:

- Housing is health care.
- Homes solve homelessness.
- Homelessness is solvable.

Based on my findings and the final recommendations, I end this thesis by quoting UNICEF, as I did Chapter 1, regarding the first 1000 days, which I then applied and modified for the first five years of life: The first five years of life “…can shape a child’s future. We have one chance to get it right.”29
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