

Mapping existing policy interventions to tackle ethnic health inequalities in maternal and neonatal health in England:

A systematic scoping review with stakeholder engagement

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Foreword



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The concept of intervention can seem deceptively simple. In healthcare, we sometimes imagine we can drop in, tweak one or two things, and somehow improve health outcomes for all. This attitude is especially common when policymakers talk about ethnic and racial equity. Some leaders will send their staff on unconscious bias training, for example, and think they've done enough. The truth, of course, is more complicated. The nature of institutional and structural racism means that considerations of race and equity need to be embedded throughout the design and implementation of any effort or meaningful intervention. Interventions that do not start here very rarely achieve equitable outcomes and, perhaps more worryingly, many of them don't measure what they're trying to achieve at all.

This report sets out to explore past interventions in maternal and neonatal health. There is a plethora of evidence showing that health outcomes are worse for Black and ethnic minority women, pregnant people and their babies in maternity and neonatal care. We know that there have been many local interventions as well as policy interventions over the years. What this report shows, though, is that very few of these interventions have set out explicitly to improve health outcomes for Black and ethnic minority women, pregnant people, and their babies.

As the report explores, many of the interventions reviewed did not have a specific focus on race or ethnicity. Nor do they take sufficient baseline measurements for effective evaluation of their impact on minority communities. The report also shows that there is no central system to find current local interventions, meaning the learning from these interventions was not being shared widely, nor the successes replicated.

These findings highlight the need for a more joined up and holistic approach. Interventions must be evaluated, and their impact on marginalised groups must be considered. This review has found that, once again, little funding or emphasis has been placed on tackling ethnic and racial health inequalities – this must change if the NHS wants to demonstrate a serious and genuine commitment to social justice.

The review makes recommendations for policy, practice, and research. It highlights the need to create systemic changes in research funding and design to ensure that any efforts to implement interventions are not wasted through lack of robust design principals, evaluation, and dissemination planning. As always, these interventions need to be created through coproduction with ethnic minority women and pregnant people, with their well-being at the centre.

If we are to improve maternal and neonatal care in the UK, we must ensure we are improving it for everyone.

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Stakeholders who agreed to be named are listed below.

Stakeholders with One-to-One Meetings

- **Prof Sara Kenyon**, Professor of Evidence Based Maternity Care, *University of Birmingham*, Member MBBRACE collaboration
- **Benash Nazmeen**, Specialist Cultural Liaison Midwife, Associate Professor Midwifery, *University of Bradford*
- **Emily Fuller**, Nursing and Midwifery Inclusion Lead, *Royal United Hospitals Bath NHS Foundation*
- **Robert Wilson**, Head of Policy, *Tommys and Sands Joint Policy Research Units*

Stakeholders at the first engagement meeting: Expert participants

- **Margaret Myatt**, Senior Midwife/Race Equality Lead and EDI Associate, *Brighton and Sussex University Hospitals*, Member NHS Race and Health Observatory Maternity Stakeholder group
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- **Dr Faye Bruce**, Chair, Caribbean and African Health Network, Member NHS Race and Health Observatory Maternity Stakeholder group
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- **Dr Hannah Rayment-Jones**, Research Fellow/Midwife, *Kings College, London*
- **Prof Jane Sandall**, Professor of Implementation Science, *Kings College London*
- **Keely McClennan**, Cheshire and Merseyside Integrated Care Pathways – Maternity Lead, *Liverpool Women's Hospital*
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Stakeholders at second engagement meeting: Mixed participants

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- **Lottie Moore**, Advisor, Public Policy Projects
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- **Robert Wilson**, Head of Policy, Sands and Tommys Joint Policy Research Units
- 7 Lay participants who could not be named due to confidentiality
- **Jess Reeves**, Sands and Secretariat, All Party Parliamentary Group Baby Loss
- **Zenab Barry**, Maternal Voices Partnership Co-Chair Chelsea and Westminster Maternity Voices Partnership (MVP); member of the Chief Midwifery Officer's Research Strategic Advisory Board.
- **Dr Faye Bruce**, Chair, Caribbean and African Health Network, Member NHS Race and Health Observatory Maternity Stakeholder group

Abbreviations

AMBC	Asian Mother and Baby Campaign
ARR	Adjusted risk ratio
BAME	Black, Asian, minority ethnic
BMI	Body mass index
CBT	Cognitive Behavioural Therapy
CINAHL	National League for Nursing and the American Nurses Association
DAG	Directed acyclic graph
DAISI	Digital animation in service improvement
DH	Department for Health
ESOL	English to Speakers of Other Languages
FMF	Fetal Medicine Foundation
GDM	Gestational diabetes mellitus
GP	General Practice
LEAP	Lambeth Early Action Partnership
LMS	Local maternity systems
MBRRACE	Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK
MEDLINE	National Library of Medicine
MMAT	Mixed Methods Appraisal Tool
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NPEU	National Perinatal Epidemiology Unit
ONS	Office for National Statistics
ORAMMA	Operational Refugee And Migrant Mothers Approach
PCC	Population, Concept and Context
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PTB	Pre-term birth
RCT	Randomised control trial
SARS	Severe Acute Respiratory Syndrome
SBL	Saving Babies Lives
SCT	Sickle Cell and Thalassaemia
TIDiER	Template for Intervention Description and Replication
The Observatory	NHS Race and Health Observatory
UK	United Kingdom
USA	United States of America

Our approach to language

In this report, we have followed the NHS Race and Health Observatory principles of the use of language outlined below.

From the Observatory:

Language has power, and the terminology we use when talking about race and ethnicity can have real world policy impact. At the Observatory, we are guided by five principles when talking and writing about race and ethnicity:

We will always be specific where possible about the ethnic groups we are referring to, only using collective terminology where there is a legitimate need to do so.

We will not use acronyms or initialisms such as BME or BAME.

Where collective terminology is needed, we will always be guided by context, and will not adopt a blanket term. In the event that the context is not decisive, we will use collective terms such as 'Black and minority ethnic', 'ethnic minority', 'Black, Asian and minority ethnic' interchangeably. This is to reflect the fact that no one term is suitable to all of our stakeholders and to respect individual and community dignity

We will always be transparent about our approach to language.

We will always be adaptable and remain open to changing our approach to language in the future.

Although this will always be our approach in our own writing, some of our research is commissioned and may directly quote pre-existing research that uses terms we otherwise would not use.

These principles were arrived at following a stakeholder consultation process carried out in Summer 2021. To find out more about it, visit our website at nhs.uk/rho/publications

Executive summary

There are substantial ethnic inequalities in maternal and neonatal outcomes. For example, women from a Black ethnic group have a four times higher rate of maternal mortality when compared to their White counterparts in the United Kingdom (UK). These inequalities remain after accounting for socioeconomic differences across ethnic groups, suggesting the role of institutional racism in perpetuating these inequalities despite national policies in the UK to redress these inequalities.

This review aimed to identify existing policy interventions designed to tackle ethnic health inequalities in maternal and neonatal health in England. We mapped the literature using a conceptual framework that incorporates maternal and neonatal patient pathways and identify areas amenable to intervention. To achieve this, we conducted a systematic scoping review of the academic and grey literature. In March 2022, we searched five electronic databases (CINAHL, PubMed, Medline, PsycINFO and Social Care Online) for studies which evaluated interventions that aimed to tackle ethnic inequalities in maternal and neonatal outcomes. Additionally, we searched the Journal of Health Visiting and conducted backwards and forward citation searches of reference lists using the Web of Science. We hand-searched reference lists of key reports, and websites of relevant organisations and contacted experts to identify grey literature. We then mapped the identified interventions to the conceptual framework, grouping interventions into six levels (patient, provider, organisation, microsystem, community, and policy). We conducted two stakeholder engagement events to ensure all relevant literature was captured and to refine recommendations. The quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT).

Nineteen studies which evaluated interventions to tackle ethnic inequalities were included in the review. The studies were of diverse designs, including randomised control trials (RCT) (3), cohort (5), case-control (1), cross-sectional (2), qualitative (5), and mixed methods (3). Of the included 19 studies, three had an MMAT score of 5/5, seven had a score of 4/5, four had a score of 3/5, three had a score of 2/5 and two had a score of 1/5. One of the cross-sectional studies (a national audit) could not be appraised by the MMAT as there was no clear research question. The interventions covered all the levels of the framework. Specific interventions, and the corresponding level of the framework they mapped into, are shown in Figure E1. The number of interventions which mapped into each level varied with most of the interventions targeting patients and providers while fewer interventions targeted other levels, particularly the policy level (Figure E1).

The quality of the evidence on the effectiveness of the included interventions in reducing ethnic inequalities was variable. The Albany Midwifery Practice model, caseload midwifery, migrants, asylum-seekers and refugee model of care, Fetal Medicine Foundation (FMF) first-trimester screening, vitamin D supplementation, health advocacy, and culturally adapted cognitive behaviour therapy (CBT) for South Asian women provided evidence of potential effectiveness, whereas there was inconsistent evidence that link workers were able to reduce ethnic health inequalities. An identified area of good practice from stakeholder engagements included the role of a Specialist Cultural Liaison Midwife to improve trust with pregnant women and provide cultural competency training. However, this role has not been evaluated.

Figure E1 Map of identified interventions and levels of the conceptual framework

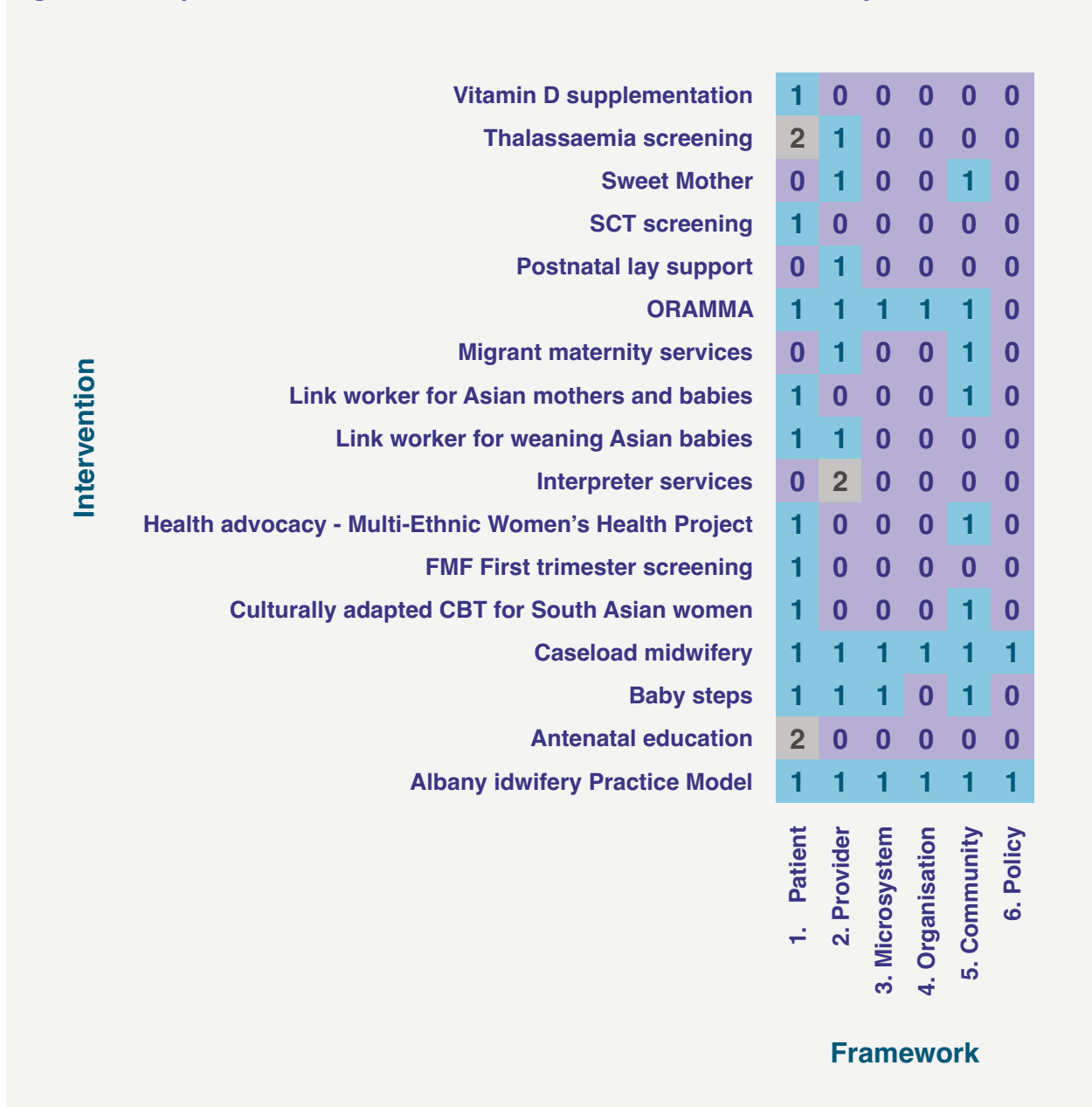


Figure E1 shows the number of interventions mapped to each level of the conceptual framework (numbers in the grid indicate the number of times an intervention was

mapped to the corresponding level). Abbreviations: CBT – Cognitive Behaviour Therapy; FMF- Fetal Medicine Foundation; ORAMMA – Operational Refugee And Migrant Mothers Approach; SCT – Sickle Cell and Thalassaemia

This review has highlighted several research gaps. Firstly, most of the evaluations were conducted in London (n=10), as such there is a lack of evidence on the effectiveness of national interventions such as the midwifery continuity of care model from other cities/regions of England which limits the generalisability of the findings. Also, we did not identify any evaluation of interventions which aimed to tackle institutional or interpersonal racism, such as tackling ethnic stereotyping and supporting people with previous experiences of discrimination in healthcare. Furthermore, most of the interventions were evaluated in single studies and were mostly observational studies or qualitative studies which are not gold standard methods for evaluating interventions. This makes it difficult to conclude whether the interventions were effective.

Finally, we identified 17 other interventions for which some have had feasibility studies conducted and some are currently being evaluated in multi-site RCTs. These include group antenatal care (Pregnancy Circles), for continuity of care during the antenatal period, and serial prophylactic exchange blood transfusion in pregnant women with sickle cell disease. Others are mostly local interventions, targeting ethnic inequalities relating to maternal and neonatal outcomes, such as continuity of care models for Roma/Gypsy Travellers in Cornwall, Chatworks Hackney, London who offer perinatal mental health for Black African or Black Caribbean pregnant women, Doctors of the World maternity care for migrants, asylum seekers and refugees. However, these interventions have not been evaluated. Studies are needed to evaluate these interventions and effective interventions should be implemented.

We have separated the recommendations from the review into two: recommendations for policy and practice, and recommendations for research.

Recommendations for policy and practice

Although this review found limited evidence on the effectiveness of specific interventions to reduce ethnic inequalities in maternal and neonatal health outcomes, our findings highlighted specific areas that should be actioned by stakeholders to reduce these inequalities. These recommendations are presented in Table E1 below. We have used a mix of the evidence base and stakeholder views to identify potential organisations which are ideally placed to action the recommendations. It should be noted that this list is not exhaustive.

Table E1. Recommendations for policy and practice

Findings from the review	Recommendations	Action
We identified 19 evaluated interventions from published articles. Through our grey literature searches and contact with experts, we were able to identify 17 additional interventions which have not been evaluated. It is possible that we have not captured all the interventions that exist. More so, reporting bias may mean that some interventions that were not successful may not have been reported.	An interactive portal on the NHS Improvement Maternity Transformation website for relevant teams and organisations to register their interventions from the feasibility/pilot stage using an appropriate framework is urgently required to capture what is ongoing across different parts of the country. This will avoid duplication of efforts and allow examples of good practice to be spread across the entire maternal and neonatal health system.	NHS England and NHS Improvement, Integrated Care System Leaders, NHS Race and Health Observatory
The quality of reporting of interventions varied across studies.	Intervention reporting should follow the appropriate checklist (such as the TIDier framework) for improved quality of reporting. This will improve evidence-based policymaking and commissioning of services	Researchers and peer-reviewed journal editors
Some interventions were designed and implemented with no consideration for how such interventions could be evaluated, making it difficult to establish whether the interventions were effective.	Evaluation of local interventions should be built into the design (such as adequate data recording), and targets should be specific, measurable, achievable, realistic, and time-bound.	Integrated care systems leaders, local maternity systems NHS England and NHS Improvement
Not all evaluated interventions were designed to reduce ethnic health inequalities as inequalities were not always measured at baseline.	A consensus on baseline measures of risk factors for inequalities in adverse perinatal outcomes as agreed by the Maternal Medicine Networks should be adopted when designing and evaluating interventions. This will permit clear evidence of the effectiveness of interventions in the reduction of ethnic health inequalities if these data are collected and measured at baseline and during the evaluation of interventions.	Research funders such as NIHR and MRC, Research groups in implementation science, Maternal Medicine Networks
There is a lack of detailed policy to tackle ethnic health inequalities. Most relevant is the implementation of Better Births by Local Maternity Systems in 2019	Detailed policy analysis is urgently required to ensure a specific policy targeted at reducing ethnic health inequalities is co-developed and rolled out to all stakeholders.	NHS England and NHS Improvement
Ethnicity is not often recorded accurately.	Ethnicity recording in health records should be improved and consistent.	NHS Digital

Recommendations for research

Increased investment in research designed to reduce ethnic health inequalities in maternal and neonatal health is urgently required as this review highlights the limited peer-reviewed evaluation of interventions. Below are the main research gaps that can frame the future research agenda in this field:

Table E2. Recommendations for research

Findings from the review	Recommendations	Action
<p>We identified 19 evaluated interventions from published articles. Through our grey literature searches and contact with experts, we were able to identify 17 additional interventions which have not been evaluated. It is possible that we have not captured all the interventions that exist. More so, reporting bias may mean that some interventions that were not successful may not have been reported.</p>	<p>Investment in research to reduce ethnic health inequalities in maternal and neonatal health is urgently required. Complex interventions that incorporate a patient's socio-economic context are urgently needed to move the focus away from the patient and towards the community where they live and the institutions they navigate in accessing care.</p> <p>Researchers seeking to address improvements in maternal and neonatal outcomes should conduct health inequality impact assessments.</p> <p>Researchers should be encouraged to publish negative findings of interventions.</p>	<p>Research funders Peer-reviewed journal editors</p>

Findings from the review	Recommendations	Action
<p>Not all evaluated interventions were necessarily designed to reduce ethnic health inequalities as these inequalities were not always measured at baseline.</p>	<p>Interventions aimed at reducing ethnic health inequalities should clearly state this in the aims and objectives of the evaluation.</p> <p>When designing and evaluating interventions that may impact ethnic health inequalities, baseline data on ethnic health inequalities should be collected. This will permit clear evidence of the effectiveness of interventions in the reduction of ethnic health inequalities.</p> <p>Beyond the reduction of ethnic health inequalities, it is also important to assess if interventions do not worsen ethnic inequalities if any exist at baseline.</p>	<p>Researchers, healthcare professionals and policymakers in the design and evaluation of interventions. Implementation Science Research Teams, Research Funders</p>
<p>Few of the studies included complete evaluation findings. There was limited evidence of the links between the evaluated interventions, implementation, and changes in practice.</p>	<p>Taking an implementation science perspective could be valuable to bridge the “know-do gap” i.e. the gap between what we know through research and what is implemented. Implementation science aims to bridge this gap by getting evidence-based findings out into practice promptly.</p>	<p>Implementation science research teams, Research funders</p>
<p>Interventions at the organisational level targeting structural and institutional processes which perpetuate racism and ethnic health inequalities are lacking.</p>	<p>Interventions targeting institutional and interpersonal racism at the organisational level are urgently needed. Using Hassen and colleagues’ conceptual framework for strategies in developing and implementing anti-racism interventions, a multi-level, long-term approach going beyond one-off cultural competency training with buy-in from senior leadership with evaluation embedded is the first step.</p>	<p>Implementation science research teams, Research funders</p>

Findings from the review	Recommendations	Action
Limited specific interventions for Black African and Black Caribbean, Roma and Gypsy and Mixed ethnic groups, Migrants, Refugees and Asylum seekers were identified.	Co-production of interventions and research with women from ethnic minority groups, in particular Black African and Black Caribbean, Roma and Gypsy ethnic groups who are underrepresented in targeted interventions are required. These can include the adaption of known effective interventions such as the culturally adapted CBT for postnatal depression for South Asian women if feasibility results are replicated in the recently concluded multisite trial.	Funders, research teams, VCSE groups, Maternity Voices Partnership, NHS England and NHS Improvement
There is a lack of detailed policy to tackle ethnic health inequalities. Most relevant is the implementation of Better Births by Local Maternity Systems in 2019	Detailed policy analysis is urgently required to ensure a specific policy targeted at reducing ethnic health inequalities is co-developed and rolled out to all stakeholders.	Implementation Science research teams, research funders
Quality of reporting of interventions varied across studies. Small sample sizes limited further stratification of outcomes by ethnicity.	Where the data permits, disaggregated ethnic groups should be adopted using the 2021 ONS census classifications to understand if only certain ethnic groups benefit from evaluated interventions.	Implementation science research teams and research funders
Quality of reporting of interventions varied across studies. We found some use of acronyms such as BME and BAME and the use of non-specific groupings such as non-White	Improving ethnicity reporting where the data permits with the use of appropriate language (such as the NHS Race and Health Observatory language principles) is needed for future studies to appreciate the different social and complex needs of these groups.	Implementation science research teams, Research funders
Quality of reporting of interventions varied across studies, reporting, and adjustment for confounders	Adjustment for appropriate confounding variables in quantitative research is vital to ensure robust findings.	Implementation science research teams, Research funders

Findings from the review	Recommendations	Action
Studies of evaluated national policy interventions such as midwifery continuity of care were predominantly from South London.	Evaluation of national policy-driven interventions from regions beyond London is needed to improve the generalisability of the findings to different populations.	Implementation science research teams, Research funders, NHS England and NHS Improvement
Lack of population health-based interventions	The recent 'Family Hubs' which will target 75 local authorities with high levels of deprivation can serve as a platform for population-level interventions to improve pre-conception health by addressing structural level barriers such as access to services. ¹ It also provides a platform for linking up local maternity systems and the integrated care systems to target specific population needs.	Integrated care system leaders, Local maternity system leaders and Research funders

In conclusion, this review highlights the paucity of evidence on interventions aimed at reducing ethnic health inequalities in maternal and neonatal outcomes. The long-standing unexplained and unjustified racial disparities of Black, Asian and minority ethnic pregnant women, mothers, and babies require urgent attention. This review provides the evidence base for key actions in achieving equity for these population groups.

Introduction

In the United Kingdom (UK), ethnic inequalities in maternal healthcare are an example of how Black, Asian, and minority ethnic groups experience the health system differently due to their ethnicity/race.

Entrenched ethnic health inequalities in maternal and neonatal care, which have persisted for decades, include a four-fold difference in maternal mortality rates between women from Black ethnic backgrounds and White women, and an almost two-fold difference between women from Asian ethnic backgrounds compared to White women, with a similar trend of two-fold difference between women from a mixed ethnic background.² Women of Black ethnicity have a greater risk of hypertensive disorders in pregnancy compared to those of White ethnicity.³

The same pattern is also observed in babies. Perinatal mortality (i.e. deaths of babies from 20 weeks of gestational age and stillbirths) are notably higher in babies of Asian and Black ethnicity compared with babies of White ethnicity (60% and 43% higher respectively).⁴ There has been minimal change in these figures between 2007 and 2021.⁴⁻⁶ Moreover, there are differences within the broad ethnic categorisations used in research. For instance, within the Asian category in an analysis to compare variations in neonatal mortality using data from 2006 to 2012, Pakistani infants of Pakistan-born mothers had lower risks of neonatal death (adjusted risk ratio (aRR) 0.84, 95% CI 0.72 to 0.98), than Pakistani infants of UK-born Pakistani mothers.⁷ These inequalities are unfair and avoidable; they are not linked to constitutional factors such as genetics but are predicated on the structuring of society that is entrenched in racism.

Race, racism and ethnic health inequalities

Ethnicity and race are complex, socially constructed multidimensional concepts relating to the group a person belongs to as a result of a mix of physical features such as skin colour and hair texture, which reflect ancestry and geographical origins, historically as identified by others or, increasingly, as self-identified.⁸ Although they are social constructs often used to describe distinct populations, they are also a subjective identity based on how individuals define themselves.⁸ While several definitions persist of what constitutes racism, all agree that it is the belief that some races are superior to others – originating from 19th-century scientific racism constructs.⁹ Racism operates at the macro, meso and micro levels.⁹ At the macro level, structural racism is a key determinant of social location, status and power and remains the core of every facet of contemporary society and is seen in both institutional practices (meso) and interpersonal interactions (micro). For instance, the shortage of labour in the

UK in the post-war era increased the migration of ethnic minority people into the United Kingdom (UK) from past colonies.¹⁰ Incoming ethnic minority migrants faced socioeconomic disadvantage structured by racism that persists. The SARS-CoV-2 (Covid-19) pandemic exposed the extent of pre-existing ethnic inequalities in the health outcomes, access to, and experiences of care for people from other non-White ethnic backgrounds globally which persists.^{11,12}

Racism contravenes international law, and the UK government has a responsibility to enact policies that will optimise the health of its citizens and redress these ethnic health inequalities. Action through legislative frameworks and policies can be in the form of 1) Acts and codes that are legally binding such as the Race Relations (Amendment) Act 2000 which places a 'general duty' on all public authorities to promote race equality,¹³ (2) White papers outlining strategic direction or priorities for action for a particular area, (3) Evidence-based guidelines providing summaries of evidence on best-practice standards such as the National Institute for Health and Care Excellence (NICE).¹⁴

A brief history of interventions

The earliest policy initiatives to tackle inequalities in outcomes for mothers and babies included the Stop rickets and Asian Mother and Baby Campaign (AMBC) launched in 1979 and 1984 by the Department of Health and Social Security and Save the Children Fund.¹⁵ Both initiatives targeted Asian women with health promotion and education on the importance of vitamin D for bone development. With the latter including link workers.¹⁶ Link workers were Asian women (20-45 years old) who were fluent in both Asian and English languages and ensured consultations between NHS staff and Asian patients were not hindered by language barriers and cultural differences.^{15,16} Although the campaign was ground-breaking at the time, with elements of success in improving communication barriers, critics found it ignored the role of structural racism in the NHS, such as blaming Asian cultures and languages for the failure of the services to deliver care and the promotion of a Western diet.¹⁵

Concurrently, maternity services were under intense scrutiny and heavily critiqued for high medicalisation and lack of personalised care for pregnant women and mothers in the general population.¹⁷ Following decades of outcry to move away from hospital care for uncomplicated pregnancies to community midwifery-led care from pressure groups, campaigners, and patient advocacy groups such as the National Childbirth Trust, the Department of Health (DH) published Changing Childbirth in 1993.^{17,18} This represented a watershed in maternity care in England with emphasis on the importance of humanised, responsive care and the three 'C's: choice, continuity, and control.¹⁸ It reversed all previous policies that the hospital was the safest place to give birth. The aims were only partially achieved due to resource constraints, a rising birth rate, higher maternal age at first birth, increasingly complex health and social care

needs of the childbearing population, and increasing rates of medical intervention.¹⁹ Subsequent policies include Maternity Matters in 2007 and the National Maternity Review: Better Births in 2016.^{20,21} An ever-increasing focus on continuity of care and carer, satisfaction, and quality of care as perceived by women and the choice in the manner of their maternity care in using the maternity services remains central to these policies.¹⁹

There is a disconnect between policy and practice. Existing policies include a specific target to ensure the continuity of midwifery care for black and minority ethnic groups.²¹ However, a lack of cohesion across the continuum of care from pregnancy and beyond birth remains a barrier to women's use of services.²² This is explained by multiple factors such as significant changes to the British population structure with an increasing number of women from Black and minority ethnic groups, women born outside the UK, and many with limited English, impacting the achievement of policy aims.¹⁹ Further, interventions to change the narrative were usually based on short-term funding at a local level with the limited national spread of lessons learned. Moreover, specific policy-driven targets for ethnic minority women and their babies were sparse until the launch of Better Births. Implementation of the recommendations from Better Births is the responsibility of Local Maternity Systems (LMS) which have a target of 75% of ethnic minority pregnant women receiving midwifery continuity of carer by 2024.^{23,24} This has also been included in the most recent NHS Long Term Plan with other targets of halving maternity-related deaths, stillbirths, neonatal mortality, and serious brain injury by 2025.²⁴

Rationale, aims and objectives

Attempts to synthesise the evidence on ethnic health inequalities have focused on experiences and access to maternity services.²⁵ Other attempts to synthesise the evidence on specific antenatal interventions for Black, Asian and minority ethnic pregnant women at high risk of poor birth outcomes in the UK do not cover the entire spectrum of how ethnic inequalities persist across maternal and neonatal care.^{26,27} Our objective was to map the literature using a conceptual framework that incorporates maternal and neonatal patient pathways and to identify areas amenable to interventions within the structure of the NHS in England. Specifically, we aimed to:

- Examine the scope and evidence on the efficacy of these interventions.
- Critically appraise existing interventions to reduce ethnic inequalities for maternal and neonatal health for all ethnic minority groups as reported in the literature.
- Identify and explore where gaps in provision remain.
- Identify areas of good practice and highlight instances where good practice has been effectively or ineffectively spread across the maternal and neonatal health system at national and regional levels.
- Provide a clear set of recommendations for where the NHS Race and Health Observatory (the Observatory) should focus its future research in this area.

Methods

Methodological approach

We conducted a systematic scoping review with two stakeholder engagement activities. A scoping review is suitable for exploring broad areas with less distinctive evidence to identify and summarise available interventions and practices. Although several iterations of the Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK (MBRRACE-UK) reports have highlighted recommendations for specific interventions targeted at Black, Asian and minority ethnic groups, the evidence describing the policy interventions linked to these recommendations is sparse.²⁸ We, therefore, used the “Arksey and O’Malley framework” for conducting scoping reviews and followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews to report findings.^{29,30} We developed an a priori protocol to guide the overall review process with the flexibility to modify specific stages of the review to meet the needs of the Observatory.

Search strategy and identification of evidence

We conducted our searches using relevant databases including those that specialise in social science (i.e., CINAHL, PubMed, and Medline), mental health (PsycINFO), and social care (Social Care Online) for studies published since inception and 3rd March 2022. We also searched the online version of the Journal of Health Visiting as this journal is not indexed in the selected databases. The electronic searches were supplemented by hand searching, examining reference lists of key papers and reports, and identifying grey literature from websites of organisations such as the National Perinatal Epidemiology Unit (NPEU), relevant third sectors organisations such as the Pregnancy and Baby Charities Working Together, Maternity Action, Tommys, Sands, and Best Beginnings. We also consulted our stakeholders (academics and clinicians working in the NHS) to provide literature for the review.

The search strategy was developed by a team of systematic review experts and information scientists (LC, AP). It included Medical Subject Headings (MeSH), thesaurus, free-text terms, and relevant synonyms for the population (pregnant women, babies, ethnicity/disaggregated ethnic groups), concept, and context levels of the inclusion criteria and used proximity operators where appropriate. The search terms were combined using appropriate Boolean operators. We used the validated

MEDLINE geographic UK filter developed by NICE to narrow the searches and identify UK studies. To ensure all study types were captured, we did not use methodological filters. We did not restrict our searches by year of publication as a pilot search did not indicate a significant reduction in results depending on the years searched. However, some studies may not be relevant to the existing policy context.

Study selection

Inclusion and exclusion criteria

We used the Population, Concept, and Context (PCC) to guide question development as developed by the Joanna Briggs Institute for scoping reviews.³¹ Using our PCC (Table 1), we included studies that reported any evaluated interventions for maternal and neonatal health and disaggregate data by the ethnic group where the data permits. We focussed on literature in England without restriction on the period to capture previously effective interventions that may no longer be widely used (Table 2). We excluded observational studies that focused on health outcomes (e.g. morbidity, mortality) without intervention and we also excluded studies on “experiences or access” of/to services for ethnic minority groups as these studies are not designed to report results of the evaluation of interventions (Table 2).

Table 1 Scoping review PCC to identify studies for inclusion in the review

Item	Definition
Population	All pregnant women and/or babies or infants up to age 1 with ethnicity reported
Concept	Any intervention targeting pregnant women and/or babies or infants up to age 1
Context	Reduce maternal and or neonatal health inequalities

Table 2 Inclusion and exclusion criteria for the scoping review

Criteria	Inclusion	Exclusion
Date	Published since database inception up to 3 rd March 2022.	None
Setting	Any healthcare setting in England	<ol style="list-style-type: none"> 1. Study conducted outside of England or it is a multi-country study excluding data from England 2. A non-healthcare setting
Population	<ol style="list-style-type: none"> 1. At least one ethnic minority group specified 2. Outcome must be specific in at least one of the following groups: pregnant women, post-partum women, babies (of any gestational age), infants up to the age of 1 	<ol style="list-style-type: none"> 1. No ethnic minorities specified or no information on ethnicities involved in the study 2. Study outcomes not specific to pregnant women, post-partum women, babies (of any gestational age) or infants up to the age of 1.
Concepts	<ol style="list-style-type: none"> 1. Ethnicity can be a place of birth, nationality, and migration status and can be self-reported or based on reporting by health care records. This may be aggregated or disaggregated. 2. Outcomes should be specified by ethnicity. 3. May include a comparison of outcomes between ethnic groups but is not compulsory 	<ol style="list-style-type: none"> 1. No ethnicity, place of birth, nationality, or migration status was reported. 2. Outcomes not specified by ethnicity either aggregated or disaggregated.
Context	<ol style="list-style-type: none"> 1. An evaluation or assessment of an intervention or healthcare access 2. Intervention may include a trial, programme, implementation, service or specific policy. 3. Specific policy may include Better Births or Midwifery Continuity of care. 4. Healthcare access may include quality of care, healthcare disparity and socioeconomic inequalities. 5. Intervention must be specific to improve outcomes in maternal and/or neonatal health such as health promotion or identifying unmet needs, therefore reducing maternal and/or neonatal health inequalities. 	<ol style="list-style-type: none"> 1. Did not include an evaluation or assessment of an intervention or health care access. 2. Intervention was not specific to improve outcomes in maternal and/or neonatal health such as health promotion or identifying unmet needs, therefore reducing maternal and/or neonatal health inequalities. 3. Experiences of services for ethnic minority groups or access to services without intervention or policy. 4. Observational studies on health outcomes such as mortality and morbidity without an intervention.
Study Design	Systematic reviews, randomised controlled trials (RCTs), observational studies (cohort, cross-sectional, audit), qualitative studies (interviews, focus groups), and mixed methods studies.	Non-original studies, such as opinion papers, and commentary.

Criteria	Inclusion	Exclusion
Publication Type	Academic journal articles, and reports from organisations.	Books or book chapters, blogs, any publication other than study reports in a peer-reviewed journal or from an organisation
Language	English Language	Papers not published in the English Language

Screening and study selection

Search results were downloaded to bibliographic management software (Endnote version 9.1)³² and imported to systematic review software (EPPI Reviewer).³³ Two reviewers (OE and NA) independently screened a 10% sample of titles and abstracts to calibrate the screening tool (Table 2) and to ensure a good level of agreement (>90%). Verdicts were compared and the inter-rater reliability was 97%. Given the high level of agreement, the remaining records were distributed between the two reviewers (OE and NA) for a single screening. Studies that did not meet the inclusion criteria were excluded. Full-text articles were screened by two reviewers. Inconsistencies were resolved with the review team (OE, NA, SS, PM, AA) through a consensus process.

Data extraction and risk of bias (quality) assessment

Primary studies were included in this review. To avoid double counting, data from studies identified in systematic reviews were only extracted if they were not a duplicate from the primary studies identified in the screening.

Three reviewers (OE, NA, and SS) extracted study data using a pre-piloted data extraction form. OE checked all data extraction tables to ensure consistency of reporting. The extracted information included:

1. Bibliographic details
2. Study design
3. Study aims
4. Study participants including details of different ethnic groups
5. Geographical coverage – i.e. local, regional or national
6. Comparison group
7. Adjustment for confounders as listed by the study
8. Antenatal or postnatal care
9. Level of conceptual framework targeted
10. Identified policy
11. Aims and key features of the interventions
12. Outcomes and outcome measures
13. Reduction in inequalities
14. Main results
15. Main conclusions

We appraised the quality of included studies using the Mixed Methods Appraisal Tool (MMAT),³⁴ this tool is a standardised instrument developed by McGill University, Canada for systematic reviews. The MMAT includes five quality appraisal criteria for each of the five study designs including qualitative studies, randomised controlled trials, non-randomized studies, quantitative descriptive studies, and mixed methods studies. Quality assessment was performed by two reviewers (OE and NA) following a calibration exercise with two studies. The completed quality assessments were cross-checked and discrepancies were resolved through a consensus.

Conceptual framework

We developed a framework in the form of a causal directed acyclic graph (DAG) a priori to allow us to group the interventions and guide the synthesis following a rapid literature review of mediators contributing to ethnic health inequalities in maternal and perinatal outcomes (Figure 1). A DAG hypothesises the causal relationships between variables and also establishes the causal pathway identifying potential areas amenable to intervention.³⁵ The following steps describe the process:

- We used the Clarke and colleagues review to identify key levels for interventions (Table 3).³⁶
- We conducted a rapid review to identify sample literature we could map onto the framework as proof of concept. These five references included two reviews (a scoping review on racial and ethnic minority pregnant patients with low income and their experiences of perinatal care and a systematic review of ethnic health inequalities in England),^{27,37} a consensus statement explaining the Black-White disparities in pre-term birth in the USA,³⁸ a study on mediators of ethnic-associated differences in birthweight,³⁹ a briefing document by the Race Foundation on addressing ethnic health inequalities in maternal and neonatal health in England,⁴⁰ and a national cohort study and confidential enquiry to investigate ethnic disparities in maternal mortality.⁴¹
- We designed the causal DAG by incorporating the levels for interventions on ethnic inequalities identified by Clarke and colleagues and applying this to a DAG similar to the work of Zambrana and colleagues.³⁹
- A conceptual framework demonstrating a causal pathway was adopted to assess the evidence for interventions using different study designs. For instance, observational studies evaluating interventions can be limited in evidence of causality. By adopting a causal framework, we can consider other ways in which the intervention may affect maternal outcomes (e.g. through confounding). Thus, we can be more confident about its effectiveness in reducing ethnic inequalities. (Figure 1).

Table 3. Definition of levels in the conceptual framework adopted from Clarkes and colleagues

Level	Definition
Patient	Change the knowledge and/or behaviours of patients and/or their family members or partners (e.g., self-management and health education)
Provider	Change the knowledge and/or behaviour of providers, and service provision (e.g., cultural competency, interpreters)
Microsystem (immediate care teams)	Add new members, or shift responsibilities among, the immediate care team, such as the primary care provider, nurse, and staff (e.g., caseload midwifery).
Organisation	Change organisation operations involving, but not limited to, clinic flow, information technology, and/or human resources (e.g., introducing Electronic Medical Records, and additional team members).
Community	Work with community organisations and/or community members who are not established patients at the intervening organisation (e.g., link workers, lay support).
Policy	Influence laws, regulations, and/or resource allocation on a regional or national basis (e.g., legislative advocacy).

Evidence Synthesis

We followed the guidelines for a systematic review without meta-analysis to guide the narrative synthesis as the most appropriate approach considering the heterogeneity in study designs, samples, and outcomes of included studies.⁴² The literature was synthesised according to the type of interventions and mapped to our conceptual framework. Ethnicity was reported according to the authors' categorisation and groupings. We followed the Template for Intervention Description and Replication (TIDier) framework in the description of the interventions.⁴³ We reported evidence of reduced health inequalities based on reported outcomes for the ethnic groups represented.

Evidence maps

Identified interventions were first categorised as either evaluated or unevaluated. A further classification was based on the nature of the intervention. We visualised the interventions, across the continuum of care using the cross-tabular format, appropriate charts, and a conceptual framework that demonstrates relationships between policy and interventions.

Stakeholder engagement

We actively involved stakeholders (meaning patients, the public, midwives, health visitors, doctors, health decision-makers, and funders) to enhance the actual and perceived usefulness of synthesised research evidence.⁴⁴ Expert audiences were also needed to identify both unevaluated or ongoing interventions not captured by both database and grey literature searches if they were in their early stages and had not been published or evaluated.

In the first instance, experts were contacted through the Observatory's maternal health stakeholder group, Royal College of Health Visiting, NPEU, Royal College of Obstetricians & Gynaecologists (RCOG), implementation science research leads at Kings College London, University of Birmingham, and the University of Warwick for evidence and asked if they would like to participate in an online workshop. Contacted experts included midwives, obstetricians, health visitors, relevant all-party parliamentary groups and policy think-thanks. We also offered to meet with experts on a one-to-one basis. Additionally, we sent out targeted e-mails to local maternity systems, policy leads at the RCOG, implementation science research groups, NPEU, and midwifery research mailing lists asking them to identify and suggest both evaluated and non-evaluated interventions targeting ethnic health inequalities in maternal and neonatal health.

Following our call for evidence, we conducted two stakeholder engagement events with different audiences. The first stakeholder event was with an expert group including academics, midwives and policy leads from RCOG to share preliminary findings of identified interventions and conceptual framework mapping. During the event, participants were allowed to share information about other interventions using an interactive online platform (<https://jamboard.google.com/> via the Google suite of cloud applications) or verbally. The second stakeholder event was attended by a mixed audience of experts in maternal and neonatal health, policymakers, community groups, and lay audiences. We used this event to present our review findings and shape the recommendations for the Observatory.

Results

Included studies

The PRISMA flow chart shows the identification and selection of studies (Figure 2). The searches identified 9,121 papers from electronic searches from inception until 3 March 2022. A total of 1,311 duplicates were removed leaving 7,515 for the title and abstract screening, of which 126 were sourced for full-text screening. At this stage, 111 papers were excluded mainly because they did not report ethnic health inequalities (26.1%), were conducted outside of England (26.1%), or were not interventions (22.5%) (Appendix File 1).

The remaining 15 studies and additional four studies from backward and forward citation searching were included in the data extraction. Hence a total of 19 studies were included in the synthesis.

We also identified 17 unevaluated interventions (Appendix File 2), with or without a report, through searching relevant organisational websites, stakeholder engagement and e-mail calls for evidence (Figure 2).

Characteristics of included studies

Table 4.1 shows the characteristics of the 19 included studies. Studies were published between 1981 and 2022 with data collection from 1977 to 2020 with approximately half conducted in London (52.6%, 10/19)⁴⁵⁻⁵⁴ (Figure 3.1). The study size varied from 10 to 20,651 with the proportion of ethnic minorities ranging from 15.6% to 100%. Participants included pregnant women, mothers, babies, family members, midwives, and other health professionals (Figure 3.2). Eleven of the studies adopted a quantitative design (RCT⁴⁵⁻⁴⁷, cohort⁴⁸⁻⁵², case-control,¹⁶ and cross-sectional^{55,56}), five studies were qualitative (interviews, focus groups),^{53,54,57-59} and the remaining three were mixed methods.⁶⁰⁻⁶² Of the 11 quantitative studies, the majority reported a comparator (81.8%, 9/11) various maternal and neonatal outcomes were reported (place of birth, mode of delivery, stillbirth, birthweight, preterm birth), and about a third adjusted for confounders such as English proficiency, comorbidity, ethnicity, mother's education and level of deprivation (36.4%, 4/11).^{16,45,47,48} Of the remaining seven studies without adjustment for confounders,^{46,49-52,55,56} one reported baseline characteristics of potential confounders⁴⁹ (Table 4.2). The 19 studies mapped into all levels of the framework; patient (15),^{16,45,46,48-52,55-60,62} provider (11),^{47-49,53,54,56-59,61,62} microsystem

(4),^{48,49,59,62} organisation (3),^{48,49,62} community (9),^{16,48,49,52,53,58–60,62} and policy (2).^{48,49} For ease of description, the intervention types identified include Models of Care,^{48,49,62} Health Advocacy/Lay Support/Link Worker,^{16,47,52,57} Prenatal Screening,^{45,50,55,56} Vitamin D,⁴⁶ Perinatal Mental Health Interventions,^{58,60} Antenatal and Postnatal Health Education,^{51,59} Migrant Services,⁵³ and Interpreter Services^{54,61} (Figure 3.3 and Table 4.2). See Appendix File 3 for full details of the interventions.

Quality Assessment of included studies

The quality of the studies varied across the different study designs (Appendix File 4). Of the three studies using RCT,^{45–47} two studies scored 4/5,^{46,47} while one study scored 3/5.⁴⁵ The criteria least reported was the lack of blinding of outcome assessors to the intervention provided, which was only reported in one of the RCTs.⁴⁶ Of the six cohort and case-control studies,^{16,48–52} three studies scored at least 4/5,^{16,48,49} one scored 3/5,⁵⁰ and the remaining two studies scored only 1/5.^{51,52} Only two of the six cohort and case-control studies reported adjustment for confounding^{16,48}. This may limit the inference of the estimates for the outcomes. Of the five qualitative studies,^{53,54,57–59} three studies scored at least 4/5,^{53,57,59} the remaining studies scored 3/5⁵⁴ and 2/5⁵⁸ respectively. Only two studies demonstrated coherence between qualitative data sources, collection, analysis and interpretation^{58,59} and the use of the qualitative approach to answer the research question.^{54,58} Of the cross-sectional studies, one did not have a clear research question, hence it was not appraised with MMAT. It was a national audit published in 1984 with a lack of information on the data collection period. The second cross-sectional study, also an audit had a clear research question with a quality appraisal score of 4/5.⁵⁶ For the remaining three mixed methods studies,^{60–62} one had a score of 4/5⁶² and the remaining two studies had a score of 2/5.^{60,61} It was not clear if divergences and inconsistencies between quantitative and qualitative results were addressed in all studies^{60–62} (Appendix File 4). Additionally, it is important to note that only three of the studies specifically stated reducing ethnic health inequalities in the aims,^{49,50,62} while none of the studies measured ethnic health inequalities at baseline.^{16,45–54,56,56–62}

Mapping identified interventions to framework and policies

Using the framework, we mapped all identified evaluated interventions to specific levels of the framework and reported relevant national policies in the studies (Table 4.3). Studies could map to multiple levels of the framework (Table 4.3, Figure 4). Fifteen of the studies identified mapped to the patient level of the framework^{16,45,46,48–52,55–60,62} and aimed to improve maternal physical health,^{16,46,48,49,62} maternal mental health,^{58,60}

neonatal health,^{45,50,52,55,56,62} infant health^{51,57,59} Eleven of the studies mapped to the provider level to improve the quality of care provided, understand ethnic nuances and consider barriers in access to health services such as language.^{47–49,53,54,56–59,61,62} Four studies mapped to the microsystem affecting the immediate care team, such as a change in the shift pattern,^{48,49,59,62} three studies mapped to the organisation level requiring a change in service delivery,^{48,49,62} and only two studies mapped to the policy level requiring resource allocation at a national level.^{48,49} Nine studies mapped to the community level to improve access to healthcare and address social/cultural complexity in the delivery of interventions.^{16,48,49,52,53,58–60,62} The included studies are described below.

Midwifery continuity of care

One study evaluated midwifery-led continuity of care which is the gold standard model of care for uncomplicated pregnancies in the UK.⁴⁹ Midwife-led continuity of care is when the same midwife, or a small group of the same midwives, supports a woman throughout the antenatal, intrapartum and postnatal period to facilitate a healthy pregnancy and childbirth, and healthy parenting practices.⁶³ The study was a retrospective analysis of midwifery continuity of care of the Albany Midwifery Practice model to examine trends and outcomes for all mothers and babies who received care from the practice.⁴⁹

In the Albany Midwifery Practice model, each woman who booked with the practice was assigned two named midwives who provided antenatal, intrapartum and postnatal care up to 28 days following birth. Of the 2,568 women included over the 12.5 years, over half were from ethnic minority groups (63.6%), with Black African (33%) being the most represented. Almost all women (95.5%) were cared for in labour either by their primary or secondary midwife. Good outcomes with high rates of spontaneous onset of labour (80.5%), spontaneous vaginal birth (79.8%), homebirth (43.5%), and initiation of breastfeeding (91.5%); the overall rate of caesarean section was 16%. The preterm birth rate was low (5%). There were 15 perinatal deaths (perinatal mortality rate of 5.78 per 1000 births); two were associated with significant congenital abnormalities. There were no intrapartum intrauterine deaths.

Despite overall good outcomes, Black, Asian and minority ethnic women were more likely to be younger, single, living in council housing and multiparous than White women. They were also less likely to have a home birth or a spontaneous vaginal birth. Their babies were more likely to be born preterm or be of low birth weight. There were no differences in the initiation of breastfeeding with both groups achieving more than 90% initiation. However, by 28 days, Black, Asian and minority ethnic women were more likely to be mixed feeding and less likely to be exclusively breastfeeding compared with White women. Although the lack of a comparison group who did not experience the Albany Midwifery Practice model limits inference on the effectiveness of the intervention to reduce ethnic health inequalities, in the absence of this and comparing with the rates in England, all outcomes achieved higher rates for all

women and especially for women from Black, Asian and minority ethnic communities demonstrating a potential to reduce ethnic health inequalities.

Caseload midwifery

One study evaluated the outcomes for women booked for antenatal care with Guys and St Thomas' NHS Foundation Trust, London, England after July 2018 following the implementation of the Lambeth Early Action Partnership (LEAP) caseload midwifery using a retrospective cohort design.⁴⁸ In LEAP caseload care, teams of six midwives care for 18 pregnant women per month. Primigravid and parous women received ten 30 minutes appointments in the woman's home or clinic setting as standard. Individualised care pathways allowed frequent and longer visits as required. Two midwives were involved from booking to postnatal care for each patient. Teams were on call for labour and provided extended post-natal care (up to 28 days). The main objective was to explore if a targeted caseload (known to reduce preterm birth) would improve important measurable outcomes (preterm birth, mode of birth and newborn outcomes) when compared with standard care in an area of social deprivation in inner city London. In non-White women, preterm births were significantly reduced in those allocated to caseload midwifery compared with those allocated to traditional care (14.4%-7.3%), but the preterm birth rate was higher overall in non-White women⁴⁶. Similarly, for women who needed interpreters, there was a statistically significant reduction in the preterm (before 37 weeks) birth rate amongst those receiving caseload midwifery in comparison to standard care.

Operational Refugee And Migrant Maternal Approach (ORAMMA)

A study on the evaluation of the pilot implementation of the Operational Refugee And Migrant Maternal Approach (ORAMMA) in Sheffield, UK, Netherlands and Greece was published in 2019.⁶² ORAMMA was a maternity care model for migrant, asylum seeking or refugee women. It consisted of the detection of pregnancy, care during pregnancy and birth, and support after birth. It was facilitated by multidisciplinary teams including midwives, social care providers, General Practitioners and Maternity Peer Supporters (MPSs). The MPS is a volunteer who acts as a cultural bridge between the pregnant person and the midwife. A mixed methods evaluation of the pilot was conducted to determine perinatal outcomes and experiences of the migrant, asylum seeking or refugee women, the MPSs and health care professionals of the ORAMMA project.

In the UK, 25 women were recruited from ethnic minority communities and undertook training to become MPSs, with 17 MPS matched to one or more newly arrived migrants to support them through pregnancy, birth and the early postnatal period; promoting cultural understanding and communication with healthcare professionals; providing social and emotional support; and enabling childbearing migrant women to navigate the unfamiliar healthcare system⁴⁷. A total of 21 women were enrolled in the pilot in Sheffield, UK. Women were from The Democratic Republic of Congo, Eritrea, India,

Iran, Kurdistan, Kuwait, Nigeria, Pakistan, Saudi Arabia, Sri Lanka, Sudan, Syria and Yemen. Most of the women were either spousal migrants (9, 42.9%) or refugees (8, 38.1%) with a third educated to undergraduate degree level (7, 33.3%) and most living in rented accommodation either paid by the state or self-funded. The average gestation at booking was 8+5 weeks, range of 6+3 – 24+4 weeks. Overall women had good perinatal health at booking. None of the women smoked, with only one reporting alcohol consumption, three had gestational diabetes and most women (18, 90%) took folic acid before 12 weeks gestation. The majority of babies born had APGAR scores above 7 in the 1st minute (16, 80%) and 5th minute (18, 90%); the average neonatal birth weight was 3400g, range 2260-4710 with two premature deliveries. At discharge from the hospital, 19 (95%) of the neonates were breastfeeding, of which 12 (60%) were breastfeeding exclusively.

Qualitative findings include high programme acceptability and satisfaction by the migrant, asylum seeking and refugee mothers, the MPSs and the HCPs. This was a result of the culturally appropriate and individualized care provided by the members of the ORAMMA multidisciplinary team, as well as the support provided by MPSs, improved access to maternity, healthcare and social services for women who were unfamiliar with the system. Hence the intervention has the potential to reduce ethnic health inequalities, although the lack of comparator limits inference.

Prenatal screening (sickle cell and thalassaemia, first trimester screening)

Four studies published between 1984 and 2022 evaluated pregnancy and neonatal screening outcomes for different ethnic groups.^{45,50,55,56} Two of the studies were on thalassaemia,^{55,56} with one on both sickle cell and thalassaemia (SCT),⁴⁵ and one on early detection of placental dysfunction during the first trimester of pregnancy.⁵⁰ Screening for haemoglobin disorders such as SCT is offered during antenatal booking of pregnancy. Both SCT are haemoglobinopathies which occur when babies inherit autosomal recessive genetic defects affecting the shape of the haemoglobins in red blood cells in a sickle cell or the amount of haemoglobin in red blood cells as is the case in thalassaemia.⁴⁵ A national screening programme for SCT was launched in 2001 in England to offer screening to at-risk couples at 10 weeks of gestation and is now universally available.⁴⁵

The first study on thalassaemia was an audit to determine if foetal testing for beta-thalassaemia major introduced in 1977 was effective in reducing the birth rate of babies born with beta-thalassaemia major in at-risk couples of Cypriot, Indian and Pakistani origin between 1977-1981.⁵⁵ Modell and colleagues found that 32% of major β thalassaemia births were prevented by 1981. The effect of testing was more pronounced in Cypriot couples and to a lesser extent in East African Asian (Indians) couples who had a 60% and a 20% decrease in babies born with beta-thalassaemia major by 1981 respectively with no change in the levels for Pakistani babies. Furthermore, most at-risk couples were not detected prospectively as intended by the programme and there

was geographical variation with decreases experienced more in London than in other areas. The study highlighted the need to consider social and cultural barriers which may impede communication with couples of Pakistani origin, especially those who had a Muslim faith. Hence the intervention was only effective in Cypriot couples and did not reduce ethnic health inequalities for Indians or Pakistanis.

A follow-on audit of genetic screening and counselling of at-risk couples for beta thalassaemia major was published in 2000 and used data from 1990-1994 (more than 10 years from the initial audit).⁵⁶ This was an audit of the UK National Confidential Enquiry into Counselling for Genetic Disorders. The previous trend of regional variation and ethnic differences in the offer and uptake of foetal testing and counselling persisted. Only half of the couples at risk received a service that allowed them an informed choice in every pregnancy, ranging from 86% of British Cypriots to 33% of British Pakistanis and from 83% of residents in the South-East to 16% of those in the West Midlands⁵¹. Screening of beta thalassaemia major was not provided to many British Pakistanis and Bangladeshis because of ethnic stereotyping despite the high acceptability of prenatal diagnosis with all ethnic groups at risk, especially when offered in the first trimester. Modell and colleagues found little change in service quality between 1980 and 1995, with limited evidence of subsequent change.^{55,56} Hence the foetal testing and counselling programme was not effective for all ethnic groups showing ethnic inequalities in outcomes remain.

The third study was a cluster randomised trial to assess the feasibility of offering universal SCT screening in primary care when pregnancy is first confirmed which was conducted between 2005-2006.⁴⁵ The trial was conducted in 25 general practices in two inner city boroughs in London ranked as the most deprived in England with high proportions of residents from minority ethnic groups. Practices were randomised to three groups for seven months: a) parallel testing in general practice (tests for sickle cell disease and thalassaemia offered to both parents when pregnancy was first reported); b) sequential testing in general practice (tests offered to mothers when pregnancy was first reported, and subsequently to the partners of women who were found to be carriers); c) and midwife care (tests offered to mothers at the first consultation with a midwife).

The primary outcome (available for all women) was the proportion of eligible women screened before 10 weeks (70 days) gestation. A total of 1,708 women entered both the trial arm and control (midwife care). the midwife care arm, 2% (9/441) of women were screened before 10 weeks' gestation compared with 24% (161/677) in the GP parallel testing arm and 28% (167/590) in the GP sequential testing arm. The estimated adjusted difference between the midwife care and GP parallel testing arms was 16.5% (95% confidence interval 7.1% to 25.8%; P=0.002) and between the midwife care and GP sequential testing arms was 27.8% (14.8% to 40.7%; P<0.001). The intervention was effective in increasing the uptake of screening before SCT despite an overall low uptake in the trial/intervention arms. It is unclear if there were differences in screening uptake by ethnicity. Hence, we could not ascertain evidence of a reduction in ethnic health inequalities.

The fourth study was a retrospective cohort study published in 2022 comparing women who underwent first-trimester pre-eclampsia risk assessment using either the NICE screening checklist or the Fetal Medicine Foundation (FMF) personalised screening algorithm which incorporates maternal clinical history and ethnicity between July 2016 to December 2020.⁵⁰ The FMF screening programme was implemented in April 2018 following evidence of efficacy from an RCT. Pregnancies at high risk of placental dysfunction were defined by a $\geq 1:50$ chance of preterm pre-eclampsia. Women in this risk category received prophylactic low-dose aspirin (150 mg once daily) until 36 weeks and serial growth ultrasound scans at 28 and 36 weeks and were offered induction of labour at 40 weeks gestation. The main outcome measures were stillbirth, neonatal death and perinatal death (both stillbirth and neonatal death) rates stratified by screening method and maternal ethnicity.

The perinatal death rate fell in the non-White group in those with the FMF screening algorithm in comparison with standard care but did not fall in the White group. However, no adjustments were made in the analyses to account for potential confounders such as maternal age, smoking, and hypertensive disorders which are known risk factors for perinatal deaths. There was also no further breakdown of the non-White categorisation when assessing the effectiveness of the intervention. Although the authors concluded the intervention was effective and reduced ethnic inequalities, the observational study design and lack of adjustment for confounders suggest a cautious interpretation of findings and the need to consider these in future evaluation studies in other settings. As such we do not know which ethnic groups it would be effective for in reducing ethnic health inequalities.

Health advocacy/link worker/lay support

Four studies published between 1990 and 2004 with data collection between 1985 and 2000 evaluated interventions of health advocacy and link workers in improving maternal and neonatal health outcomes.^{16,47,52,57}

Two of the four studies focused on the role of the link worker in improving outcomes for Asian mothers and babies.^{16,57} Link workers are forms of social support during pregnancy and beyond. They are usually bilingual and provide an interpreter service as well as basic health education for their clients while relaying information back to healthcare providers.⁶⁴ The first of the link worker studies was a case-control study to evaluate the role of the link worker in (a) improving Asian women's use and understanding of health care during and following pregnancy and (b) increase in birth-weight and health condition of the babies as a result of improved knowledge of the mothers in Leicestershire (East Midlands) by comparing Asian pregnant women who saw a link worker and those who did not between 1985-1987.¹⁶ Of the 457 women included in the study, 63% were Gujarati speakers, and 17% were Punjabi speakers, with similar proportions across both groups. They were slightly more Hindi and Urdu speakers who did not see a link worker and more Bengali speakers who saw a link worker.¹⁶ The link workers provided a much-needed interpreter service but were less

successful in imparting health education knowledge to Asian women who were not proficient in English and there were no significant differences in birth weight, and mean gestation age at birth amongst those who saw a link worker and those who did not. As a result, the intervention was not effective and there was no evidence of a reduction in ethnic health inequalities.

In the second, a semi-structured client questionnaire was used to evaluate a pilot study of the role of the link worker working alongside health visitors in delivering a weaning intervention to 30 British Pakistani families living in Luton, South-East England in 2000 and published in 2004.⁵⁷ The intervention offered weaning advice during monthly visits to clients in their own homes during the weaning period. An introductory visit and baseline assessment of the babies were made when the babies were three months old. The intervention was evaluated when the babies were 8 months and at 12 months. The intervention was effective as infants achieved the main study outcomes of the ability to eat a variety of foods including family meals, drink juice/water from a cup and finger feed by age. As this was a qualitative study of only British Pakistani women without a comparator group, we were not able to determine if there was clear evidence for a reduction in ethnic health inequalities, however, the intervention demonstrates the potential for this effect.

In the third, a retrospective cohort study was conducted to evaluate the role of health advocates in providing an interpreting service and influencing hospital policy and practice as part of the Multi-Ethnic Women's Health project to improve obstetric outcomes for women living in Hackney, London, England.⁵² Health advocates give a "voice" to their clients by supporting and speaking on behalf of their clients/service users rather than the healthcare professional.⁶⁵ The evaluation compared 923 women with Asian and Turkish names who had been accompanied by an advocate at Mother's Hospital between 1985-1986 with women with non-English speaking names who had delivered in 1979 (n=866) without an advocate and at another hospital (Whipps Cross) in 1979 (n=999) and 1984-1986 (n=993).⁵² The authors found significant differences in antenatal length of stay, the onset of labour and mode of delivery with CS reducing from 10.8% to 8.5% at the Mother's Hospital while the rate doubled at Whipps Cross hospital during the same period with no significant difference in birth weight. Although the authors concluded intervention was effective, the selection bias in the reliance on names from hospital records of varying completeness limits the inference of effectiveness as the study may have excluded some women who used advocates.

The remaining study on lay support was an RCT on postnatal support for mothers living in disadvantaged inner-city areas in London in 1999 and published in 2004.⁴⁷ Lay support healthcare workers are non-professionally trained health workers who mediate between the community and health professionals to identify risks to health and to promote health, particularly in disadvantaged communities. Two interventions implemented at the individual and community level were compared to routine NHS health visiting services in the Camden & Islington areas of London, England for women who had given birth in 1999. The individual-level intervention consisted of the

provision of supportive listening during monthly visits by the support health visitor in the woman's home beginning when the baby was about 10 weeks old. While at the community level, women were assigned to one of eight community groups for group support intervention. The existing community groups offered services for mothers with children less than 5 years in the study area. At recruitment, 58% of women were of White ethnicity and 42% were non-White of which 15% required interpreters. At 12 and 18 months, there was very little impact of either intervention on the main outcomes of maternal smoking or maternal depression. Outcomes were not stratified by ethnicity while a subgroup analysis of those who needed interpreters and those who were proficient in English did not find any significant differences in the outcomes. It is not clear if the possible confounders listed at baseline were included in an adjusted analysis. The intervention was not effective and there was no evidence of a reduction in ethnic health inequalities.

Sweet Mother

The Sweet Mother intervention was to offer social and practical support alongside a specialist therapeutic mother-infant group for West African migrant mothers.⁵⁸ The service model included a role for cross-culturally trained volunteers for the intervention, offering practical and emotional befriending support alongside two psychologists delivering the therapeutic group.

The evaluation aimed to explore the impact of the intervention on the quality of the mother-infant relationship. Women were recruited via psychologists embedding themselves in a drop-in community group, Merseyside Refugee Pre- and Post-Natal Support group. The evaluation consisted of session-by-session evaluation using a simple questionnaire to gather women's views at each weekly group using a simple questionnaire; reflective focus groups on the mother's developing relationship with their baby, relationship with others in the group and relationship with the psychologists; and the infant CARE Index which assesses playful adult-infant interaction occurring under non-threatening conditions and can be used with infants from birth to 15 months. Guided video feedback with the mother provided a baseline assessment of the infant CARE Index. Subsequently, CARE Index video clips were taken by volunteers and psychologists at approximately two-month intervals for analysis, coded by one psychologist and an external coder.

Between four to 12 mothers and babies attended the 21 therapeutic group sessions with seven mothers and babies attending a significant proportion of all group sessions. The narrative from the reflective focus group suggests that being part of Sweet Mother made mothers feel safe, learn about parenting across cultures, increased their understanding of and interaction with their baby and helped them to feel more accepting of their baby's needs⁴⁸. Pre- and post-video clips of mother-infant interaction for five mothers and their babies were taken and analysed using the CARE Index. The results vary showing that two mothers and babies moved from the "seriously compromised" into the "of concern" range indicating a positive change in the quality of

the relationship; two mothers and their babies remained borderline between “seriously compromised” and “of concern”. One mother and baby remained in the “good enough” range, moving towards the upper end of the global sensitivity scale⁴⁸. These suggest a positive shift in the quality of attachment relationships. The small scale of this evaluation and the lack of a comparator group limits inference on effectiveness to reduce ethnic health inequalities.

Cognitive Behavioural Therapy (CBT) group intervention

A mixed method RCT to determine the acceptability of a culturally adapted Cognitive Behavioural Therapy (CBT) group intervention for postnatal depression for British Pakistani women in Manchester, North West, England was published in 2019.⁶⁰ For the quantitative aspect, which is the focus of this review, the authors explored the acceptability and feasibility of the CBT-based, manual-assisted intervention called the Positive Health Program in this group of women. The intervention was delivered over 12-weekly sessions, each lasting for 60-90 minutes. This consisted of group CBT based on psycho-education, behavioural activation, problem-solving, relaxation, and managing negative thoughts. Adaptations made include culturally appropriate assignments and homework, folk stories and examples with considerations to religious beliefs and understanding. Participants were assessed at baseline, 3 months (end of the intervention), and 6 months after baseline for the presence of postnatal depression using the Edinburgh postnatal depression scale, health-related quality of life using EuroQol (EQ-5D), marital relationship, perceived social support and service satisfaction. Fifteen women consented to the intervention with 10 attending four or more group sessions.⁶⁰ There was a reduction in depressive symptoms as the median EPDS score was 20 at baseline which reduced to 11.5 by week 4, and 11 by week 8 with a sustained drop at 6 months after baseline with a median score of 5. There was an improvement in the marital relationship and increased perceived support from family, friends and significant others. This suggests a potential to reduce ethnic health inequalities. However, the evaluation was based on a small sample without a control group, limiting inference on its effectiveness to reduce ethnic health inequalities.

Antenatal and postnatal education

We identified two evaluated interventions published in 1986 and 2015.^{51,59} The first was a prospective cohort study conducted in East London to assess the effects of a special antenatal education programme on infant health.⁵¹ Women from Pakistani and East African Asians (Indians) were recruited from a two-doctor General practice in the London borough of Waltham Forest to deliver at Whipps Cross Hospital. A total of 69 women were enrolled in the study, with 35 women randomly allocated to the intervention group and 34 women to the control group. The intervention arm received 12 weekly lectures held in a health clinic near the doctor’s surgery. Each session lasted 1.5hr and comprised fertility, pregnancy, childbirth and child-rearing by a health visitor, midwife or nutritionist to the intervention arm. The content was relayed in Urdu by an interpreter. Those in the control arm were offered the routine antenatal

are available to all women in their area. Despite informed consent and involvement of Pakistani community leaders and interpreters with the course content designed with sensitivity to religion and ethnic customs, only three women completed the course of 12 lectures with 16 (46%) completing four or more⁶⁴. The intervention arm had more mothers who continued to breastfeed while giving additional feeds of formula milk. There was no difference in birthweight or Apgar score at 1 minute, and at 12 months, the incidence of iron deficiency did not differ. The uptake of vaccination was incomplete in the control group which also contained more children who were not given multivitamin supplements. Due to the low attendance of the antenatal education in the intervention arm, it was not clear if the differences observed could be ascribed to the health education, as such, it is not clear the intervention had the potential to reduce ethnic health inequalities.

A more recent health education programme, “Baby Steps” was designed by the National Society for the Prevention of Cruelty to Children (NSPCC) and the University of Warwick for hard-to-reach parents including minority ethnic parents.⁵⁹ Baby Steps was evaluated using semi-structured face-to-face interviews to determine if it was successful in improving parents’ outcomes. The programme was jointly delivered by a health visitor and a children’s services practitioner (family support worker or social worker). Topics covered include traditional antenatal education such as birth, breastfeeding and practical baby care. Parents attended nine group-based sessions from the 28th week of pregnancy including three sessions after birth. Materials used to deliver the content were adapted to suit the needs of the group such as by using examples of foods that were culturally appropriate when discussing healthy eating. Interpreters were provided for parents with a low level of English. Fourteen parents (11 mothers, 3 fathers) of Pakistani, Somali, Indian, Chinese, Caribbean, Bangladeshi and Oromo (cultural group from Ethiopia) ethnic groups who attended the Baby Steps programme consented to the evaluation either directly or through an interpreter. The level of spoken English varied from those who spoke no English at all to those who were fluent. Parents found the Baby Steps programme increased their knowledge about pregnancy, birth and parenting. It also increased their confidence due to their lack of familiarity with the UK health system, and for some couples, it improved their family relationships. The positive outcomes demonstrate the potential to reduce ethnic health inequalities. However, the lack of a comparator group limits the inference of reduction of ethnic health inequalities.

Vitamin D supplementation

One study published in 1981 compared first-generation pregnant immigrant Asian women living in London who received Vitamin D in the last trimester with Asian women who did not.⁴⁶ Both the supplemented and control groups were similar in terms of maternal age, parity, height, weight, socio-economic status, vegetarians, and countries of origin. Maxwell and colleagues found that women in the supplemented group had a higher mean daily weight gain, and higher protein concentration and their babies weighed more in comparison with the control group. The study demonstrated the need

for Vitamin D supplementation in the last trimester of pregnancy for Asian women living in London who were known to have subclinical vitamin D deficiency, suggesting a potential to reduce ethnic health inequalities.

Interpreter services

Two studies published 10 years apart (2011 vs. 2021) focussed on the evaluation of interpreter services.^{54,61} The first was a mixed methods study of the role of interpreters in delivering the Family-Nurse Partnership in England. The programme was designed to support young, vulnerable, first-time mothers, it aims to improve pregnancy outcomes, child health and development and the economic self-sufficiency of the family. A review of programme delivery forms from all 10 centres and an in-depth semi-structured interview from three sites with a high level of interpreters found that an equivalent proportion of the programme's visits was delivered with an interpreter, but less content was covered, with less client involvement. Although it was possible to develop a relationship with the client, certain aspects of the programme such as the role-playing exercises may not be conveyed adequately through an interpreter as stated by one of the health visitors:⁵⁵

“I was talking about the five stages of play and getting the interpreter to relay that. Then I demonstrated it with a teddy on the floor. When it came to the mum's turn I had to stop her to say through the interpreter to let the child lead”⁵⁵.

The second study on the use of interpreter services was on pregnant women with social risk factors such as Black and minority ethnic women, women living in less affluent neighbourhoods, those who are refugees and asylum seekers, homeless, with mental health issues and domestic violence.⁵⁴ Using a realist methodology, Rayment-Jones and colleagues explored whether women with those social risk factors found these interpreter services acceptable, accessible and safe, and suggested solutions to address challenges.⁵⁴ Of the eight non-English speaking women included, all participants lived in the 1st or 2nd most deprived deciles. All participants were experiencing between one and seven social risk factors including mental health issues, domestic violence, single motherhood, financial and housing problems, previous sexual abuse/trafficking, female genital mutilation and no recourse to public funds and most were asylum seekers/refugees (5). The women had a negative experience with interpreter services during their maternity care, either through a lack of access to the service, or poor-quality interpreter service due to the language barrier in booking the services via their GPs, not having the option to choose their interpreter and the feeling of not being listened to. We were unable to determine if there was evidence of a reduction in ethnic health inequalities.

Migrant service

One study reported the evaluation of an NHS specialist migrant maternity service at an initial accommodation centre for migrants and refugees provided by King's Hospital London.⁵³ Antenatal maternity care was provided exclusively within the initial accommodation centre with extended appointments. Other features of the service include bookable subsidised transport for hospital appointments and intrapartum transfer, working alongside multidisciplinary health teams of GP, health visitors, Refugee Council therapeutic listening service, safeguarding teams and community groups. A semi-structured, multi-lingual, in-depth interview was conducted with 10 service users who had recently given birth (n=9) or was pregnant (n=1) and were of several nationalities (Vietnamese, Chinese, Albanian, Nigerian, Afghan and Yemeni) with an age range from 23-37 years. Interviews comprised 17 questions based on the NICE 2010 guidelines for "service provision for pregnant women with complex social factors".⁶⁶ The women conveyed a high level of satisfaction with the service, in particular, satisfactory access to midwives with the majority having continuity of care with access to the same midwife (n=8); referrals for obstetric and medical care and as well as mental health support in their native language; access to interpreters both at the centre and hospital; provision of essentials and transport, respect and kindness of caregivers. The negative aspects such as poor maternal nutrition, lack of access to hygienic infant-feeding equipment, lack of social support building and lack of service signposting were outside the immediate remit of the maternity team. Notwithstanding, the health impact of these issues on the women in the study raises the need for holistic care. We were unable to determine if there was evidence of a reduction in ethnic health inequalities.

Unevaluated interventions

Below we describe some of the unevaluated interventions identified.

Midwifery continuity of care

A multi-site trial of group antenatal care called "Pregnancy Circles" is currently ongoing following an acceptable feasibility study.^{67,68} The intervention of group antenatal care, a form of continuity of care, consisted of a group of up to 12 women living in a specific geographical locality who were due to give birth within a pre-specified three-week period.⁶⁷ Groups were held in community venues (e.g. libraries, Children's Centres) and each session was facilitated by two midwives, with support from a third coordinating midwife. Circle sessions ran for two hours and followed the timeline and content outlined by NICE for standard antenatal care in the UK with the addition of a postnatal reunion.^{67,69} Eligible women were invited to opt-in to join a Pregnancy Circle at their booking appointment. Circles could include women categorised as having both 'high' and 'low' risk pregnancies.^{67,68}

In the feasibility studies, midwives felt it provided continuity of care and allowed the building of relationships with women, raised morale among midwives and met some local and national service targets including improved continuity of carer.⁶⁷ However, a perceived lack of privacy, self-checks and the involvement of partners - were identified as needing attention before the intervention scale-up.

We were also notified of a case-loading model for the Roma/Gypsy Traveller community in Cornwall (personal communication, Zoe Nelson, Royal Cornwall Hospitals NHS Trust) and the role of the specialist health visitor for Gypsies and Travellers living in South Gloucestershire.⁷⁰ The health visitors designed a Health Improvement Programme in collaboration with members of the local Gypsy and Traveller community. It involved sessions on oral health, making healthy choices and staying healthy as well as the involvement of other agencies such as Sure Start to provide play and development activities. The specialist health visitors have plans to train health champions or health trainers from the Gypsy and Traveller community to facilitate better engagement and support them in understanding the benefit of making healthy lifestyle choices and how to access services.

Antenatal and Postnatal Education

Haith-Cooper and colleagues described the co-development and feasibility testing of a digital animation intervention – DAISI (digital animation in service improvement) to enhance Asian women’s awareness of sepsis and how to reduce their risk of developing the condition in the postnatal period.⁷¹

Following an iterative co-design with key stakeholders including clinical midwives and women with infants, a 3-minute animation for smartphones including subtitles with a voice-over in English and Urdu was developed.⁷¹ It comprised of three stages, Care, Clean, and Contact. Each stage had a key behaviour change message to reduce the risk of developing sepsis; care for yourself through diet, adequate fluids and rest, keeping clean (personal hygiene) and whom to contact should the person develop signs and symptoms of sepsis. In the feasibility study, participants (midwives and mothers) were positive that the intervention could be an acceptable tool for women to change their behaviour in the postnatal period to reduce sepsis with the simplicity of the tool as the main facilitator. Barriers to following advice were related to lack of time and physical exhaustion due to childbirth and women’s different cultural roles.⁷¹

The intervention was evaluated during the Covid-19 pandemic with weak results. Other similar DAISI interventions with approved funding for evaluation include a DAISI for gestational diabetes and a DAISI for stillbirth (personal communication, Dr Melanie Haith-Cooper).

Health advocacy/link workers/lay support

With the Department of Health 2004 paper on the creation of new advocates and link worker roles,⁷² we identified several health advocacy and link worker interventions for maternal and child health targeting ethnic minority women. The captured interventions are listed in Appendix File 2. They include Bradford Douala,⁷³ Maternity Mates in East London,⁷⁴ and perinatal mental health services in Hackney.⁷⁵

Stakeholder engagements

First stakeholder engagement meeting: Expert participants

Nine stakeholders responded to our request for engagement in April 2022 following an email request for evidence on policy interventions to tackle ethnic health inequalities in maternal and neonatal health and call for participation. They included academics, clinicians and policymakers.

Most of the recommended studies from stakeholders were duplicates or did not meet the inclusion criteria for the review. One of the recommended reports was from a representative of the All Party Parliamentary Group on Muslim Women and the Muslim Women's Network "Invisible – Maternity experiences of Muslim women from racialised minority communities".⁷⁶ The report was based on a survey of Muslim women's experiences of maternity services and not an evaluation of an intervention.

Other ongoing projects highlighted included a co-produced set of standards for Black & Asian women using maternity services by the Greater Manchester maternity system and across voluntary, community and social enterprise (VCSE) organisations,⁷⁷ mentoring programmes for Black and Asian midwifery students to offer support and reduce attrition, working with higher education institutions to increase the representation of Black and Asian midwifery students and English to Speakers of Other Languages (ESOL) training in Liverpool following recommendations from the MBRRACE report 2020.

Ongoing local initiatives include the expansion of Specialist Cultural Liaison Midwife roles in other trusts following a change from the title BAME Lead Midwife at Bolton NHS Foundation Trust. A Specialist Cultural Liaison Midwife liaises between different cultures to raise awareness and understanding of barriers and work towards building mutual learning and trust. Cultural Competency and Safety training is also provided to staff while others have initiatives to decolonise the curriculum such as understanding breast conditions in women with darker skin pigmentation. Although there was a call to evaluate their roles in reducing ethnic health inequalities, it was acknowledged that measurable outcomes may differ across settings and the length of time in the realisation of impact.

Second stakeholder engagement meeting: mixed participants

Nine academics, clinicians, policymakers and seven lay members (1 Mixed White and Arab, 1 – South Asian, 2- African, 1- Black British, and 2-Black Caribbean as reported by attendees) responded to our call for participation.

Contributions

Lay participants shared experiences of not being listened to, stigma about their body shape and labour, not getting their choice of hospital for giving birth but instead being referred to another based on the ethnic mix at other sites, and lack of information on care and services available during pregnancy. Some of the lay participants were more comfortable sharing their views with research team members privately rather than during the meeting. Issues raised include safety concerns with care received from unsupervised student midwives and the lack of cultural competency of the clinical team.

Stakeholder Recommendations

There was a strong call for the co-production of interventions with service users; improved ethnicity recording by not making false assumptions about someone's ethnicity; the need to recognise the role of GPs in pregnancy and post-partum care; integration of local maternity systems with wider public health teams to ensure understanding of the local demography; and embedding targeted public health messages in routine care. Other recommendations for research include avoiding large categorisations such as White vs. non-White, interventions targeted to specific ethnic groups and more evidence from other regions of England. There were also recommendations in the training of healthcare staff in de-colonising the curriculum, moving away from White ethnicity as the only reference group in teaching and a penalty in professional practice when racist attitudes or behaviours are perpetuated.

Discussion

Summary of main findings

This review provides a striking picture of the limited evidence on policy-driven interventions designed to tackle ethnic health inequalities in maternal and neonatal outcomes. In over 40 years since the earliest intervention, we identified only 19 studies which met our review inclusion criteria. The studies were mainly in London and were very heterogeneous, making it difficult to synthesise and generalise. The identified interventions targeted both the antenatal and postnatal pathways of maternal and neonatal health. Most of the evaluated interventions we identified mapped into the patient, provider, and community levels of the conceptual framework, and only a few mapped into the remaining levels. We identified areas where interventions may be targeted, including institutional and interpersonal racism.

Interventions were not rigorously evaluated and low-quality reporting limited inference on effectiveness. A range of outcomes were reported covering both maternal outcomes (such as mode of delivery, and place of birth) and neonatal outcomes (birthweight, stillbirth, and preterm birth), although most of the studies focused on maternal outcomes. There were five interventions specifically targeting Asian/South Asian ethnic groups,^{16,51,52,57,60} one specifically targeting West African migrants,⁵⁸ and the remaining did not focus on any specific ethnic minority groups. Only three of the studies were RCTs and these RCTs were conducted in 1981,⁴⁶ 2004,⁴⁷ and 2010.⁴⁵ Most of the studies were single-site observational studies which lacked adjustment for confounders such as maternal age or qualitative studies with limited inference on effectiveness.

Some of the interventions demonstrated the potential to reduce ethnic health inequalities. These included: midwifery-led continuity of care,⁴⁹ caseload midwifery,⁴⁸ model of care for migrant, asylum seeking and refugee women,⁶² health advocacy for Asian mothers,⁵² link worker weaning intervention for Asian babies,⁵⁷ first trimester combined screening for placental dysfunction,⁵⁰ vitamin D supplementation,⁴⁶ and CBT for South Asian women.⁶⁰ Some interventions were linked to current policy on Maternity Transformation Programme - Better Births,²¹ Maternity Transformation Programme - SBL,⁷⁸ NICE Guidelines on the use of Whooley questions,⁷⁹ service provision for pregnant women with social risk factors,⁶⁶ and Department of Health Guidance on implementing overseas visitor charges.⁸⁰ Others link to past policies, such as Stop Rickets (vitamin D supplementation),¹⁵ Asian Mother and Baby Campaign (link worker),¹⁵ NICE guidelines,^{66,69,79} Changing Childbirth (Albany Midwifery Practice Model),¹⁸ Saving lives: Our Healthier Nation,⁸¹ Department of Health National Service

Framework,⁷² and Reaching Out: An action plan on social exclusion, Preparation for Birth and Beyond,⁸² and Every Parent Matters framework,⁸³

From the included studies, the current status of some of the interventions remains unclear. Some of the small-scale research-led interventions could not be traced to a full evaluation or implementation such as link workers for weaning of South Asian infants or Sweet Mother intervention.^{57,58} We also identified ongoing interventions that are yet to be evaluated or fully implemented which have demonstrated good outcomes in feasibility studies. These included Pregnancy Circles – group antenatal care to ensure continuity of care in the antenatal period⁶⁷ and a culturally adapted DAISI to enhance Asian’s women awareness of sepsis and how to reduce their risk of developing the condition.⁷¹ Another intervention at the feasibility stage is a serial prophylactic exchange blood transfusion in pregnant women with sickle cell disease.⁸⁴ Serial prophylactic exchange blood transfusion is effective in treating sickle cell disease outside pregnancy but the evidence is lacking regarding its use in pregnancy.⁸⁴

Interventions with the potential to reduce ethnic health inequalities

Models of care

Evaluated models of care interventions linked to Changing Childbirth and Better Births demonstrated evidence of a reduction in ethnic health inequalities although inference was limited in the latter due to the lack of a comparison group.^{48,49} These interventions consisted of continuity of care as the core element while ensuring women received personalised care based within their community. Trust, engagement, improved care coordination, and earlier referral for women with social factors and social vulnerability are essential elements of midwifery-led continuity of care models.⁶³ As such these complex interventions mapped across all levels of (patient, provider, microsystem, organisation, community) of our framework except the policy level (patient, provider, microsystem, organisation, community), demonstrating how targeting different levels may improve perinatal outcomes.

Other studies have also shown the effectiveness of models of care in the general population, although they did not report the impact on ethnic health inequalities. A Cochrane review by Sandall et al. published in 2016 found that women who received midwifery continuity of care models were, on average, 24% less likely to have a pre-term birth and 19% less likely to lose their babies before 24 weeks gestation.⁶³ Using a realist methodology to gain a deeper understanding of how women with social risk factors reacted to specific resources that the continuity of care model offers and how these resources may lead to particular outcomes for women, Rayment-Jones et al.

found that midwives felt that for women with social risk factors, the impact of a trusting relationship affected how much information women disclosed, allowing for enhanced, needs led, holistic care.⁸⁵ Results from a recent RCT to determine the implementation process and effectiveness of midwifery continuity of care versus standard maternity care for women at increased risk of preterm birth published in 2020 found there was no impact on most outcomes despite the achievement of fidelity in the model of midwifery continuity of care linked with specialist obstetric care.⁸⁶ This suggests midwifery continuity of care may be more suited to low-risk pregnancies.

The Maternity Transformation Programme is the most recent policy on the delivery of maternity services in England.⁸⁷ It was launched in response to the National Maternity Review: Better Births in 2016 with a vision for all maternity services in England to be “safer, more personalised, kinder, professional and more family friendly; where every woman has access to information to enable her to make decisions about her care; and where she and her baby can access support that is centred around their individual needs and circumstances. And for all staff to be supported to deliver care which is women centred, working in high performing teams, in organisations which are well led and in cultures which promote innovation, continuous learning, and break down organisational and professional boundaries” (p8, National Maternity Review: Better Births in 2016).²¹

Subsequently, the Local Maternity Systems (LMS) were launched in 2017 with the responsibility for implementing the recommendations from Better Births in their locality.^{23,87} They were tasked with ensuring equity of outcomes for vulnerable women and women from Black, Asian, and minority ethnic groups.²³ Of the three studies linked to models of care, two were conducted in the Lambeth and Southwark area of London, UK^{48,49} and one was conducted in Sheffield, Yorkshire and The Humber, UK as part of a European multi-site study.⁶² Hence, evaluation of the implementation of midwifery-led continuity of care and recommendations from Better Births across different regions in England and its impact in reducing ethnic health inequalities are warranted.

Intervention on a specialist migrant service was also linked to the models of care and the maternity transformation programme.⁵³ Although we could not assess the effectiveness in the reduction of ethnic health inequalities, the provision of maternity services within an initial accommodation for migrant and asylum-seeking women was highly acceptable to women, allowing them to experience continuity of care before removal or moving to another location. These vulnerable women are known to present late for antenatal booking and have higher rates of preventable illnesses that increase their risk of adverse outcomes. Studies by Doctors of the World documented migrant women, asylum seekers and refugees’ experiences of access to care.⁸⁸ They demonstrate that NHS overseas visitor charges are a barrier to access as guidance on the exemption to charges can be difficult to interpret in high-pressure acute healthcare settings.^{80,88}

First trimester screening

Another intervention with the potential to reduce ethnic health inequalities is first trimester foetal testing for the risk of pre-eclampsia in Black, Asian and minority ethnic groups to reduce pre-term and stillbirths.⁵⁰ This was linked to the current SBL bundle of care.⁷⁸ It was launched following an MBRRACE report that almost half of the antepartum stillbirths were potentially avoidable if improvements were made in at least one element of antenatal care such as early screening.^{78,89} Liu and colleagues evaluated the implementation of the Fetal Medicine Foundation screening algorithm and the impact on ethnic health inequalities following good outcomes from an RCT.^{50,90} Although the authors concluded the intervention was effective, there were biases in the study design (uncontrolled observational study, lack of adjustment for potential confounders such as maternal age, and smoking status), and a need for cautious interpretation of effect sizes due to large confidence intervals.⁵⁰ This may be due to the small sample size. The authors suggested that a larger multicentre collaborative study was needed to assess the significance of the impact of perinatal death rates following the implementation of the FMF combined screening programme, which is now ongoing.^{50,91} A mixed methods evaluation of SBL found that the implementation of the SBL care bundle increased over time in the majority of sites.⁹² Implementation was associated with improvements in process outcomes such as improved documentation of screening for small gestational age with a reduction in stillbirth rates in participating sites exceeding that reported nationally in the same timeframe.⁹² Outcomes were not reported by ethnicity and the 'before and after' evaluation study was conducted following implementation. The authors suggest the need for evaluation to be planned at the same time as the implementation of large-scale initiatives to ensure that the opportunity to collect data to inform the ongoing development of care is maximised.⁹²

Culturally adapted CBT for South Asian mothers

Culturally adapted CBT for South Asian mothers linked to the NICE Guidelines on Whooley questions demonstrated the potential to reduce ethnic health inequalities.^{60,79} The intervention mapped onto the patient, provider and community levels of our framework which therefore demonstrates the potential to intervene on multiple levels to improve perinatal outcomes.⁶⁰ It was a small-scale evaluation conducted in Manchester, North West England. It reported beneficial outcomes of reduced depression scores, improved marital relationships and perceived social support. A larger multisite RCT in the North West, Midlands, Yorkshire & The Humber, London and Glasgow was completed in August 2022 and we are awaiting results.⁹³ If the beneficial outcomes are replicated in the larger RCT, similar approaches targeting other ethnic groups may be warranted.

Vitamin D

A previous policy-driven intervention with the potential to reduce ethnic health inequalities is Vitamin D supplementation for Asian women linked to the Stop Rickets campaign in 1980 to reduce bone softening in Asian babies which later evolved into the AMBC.¹⁵ Since the AMBC, national policies for vitamin D supplementation include access to supplements for disadvantaged pregnant women and mothers via the Healthy Start supplement schemes and dietary/nutrition advice via Sure Start Children centres as part of the Department of Health, Best Practice Guidance on Maternity Standard, National Service Framework for Children, Young People and Maternity Services, 2004.⁷² In 2014, NICE published guidelines on Vitamin D supplement use in specific population groups.⁹⁴ These include infants and children aged under 4; pregnant and breastfeeding women; people who have low or no exposure to the sun (those who cover their skin for cultural reasons or those confined indoors for long periods); and people with dark skin (people of African, African-Caribbean or South Asian family origin). Despite these guidelines, implementation was not routine among healthcare professionals.⁹⁵ A Cochrane review published in 2019 has demonstrated the need to understand the reported association of vitamin D status with reduced risks of pre-eclampsia, gestational diabetes, and low birth weight in populations with different degrees of body mass index (BMI), skin pigmentation, vitamin D status and settings.⁹⁶

Health advocacy/link worker

Health advocacy for Asian women living in Hackney, London was linked to improvement in obstetric outcomes at birth in an observational study.⁵² Link workers working alongside Health Visitors established good weaning habits in Bangladeshi infants in Luton, Bedfordshire, South East England.⁵⁷ Although both interventions demonstrated the potential to reduce ethnic health inequalities, inference of the effectiveness to reduce ethnic health inequalities was limited by the observational study design of the health advocacy intervention and by the lack of a comparison group in the evaluation of the weaning intervention.^{52,57} The health advocacy intervention aimed to provide both an interpreter service and influence hospital policy and practice.⁵² These are difficult to assess in an observational study during a period of other changes to maternity care. Nevertheless, the health advocacy project continued beyond the initial evaluation period and women participating in the intervention continued to experience good pregnancy outcomes. Both interventions attributed lessons learnt from the AMBC as the rationale for the interventions. This was because link workers as an intervention in the AMBC were not effective in imparting health knowledge and were only effective as interpreters.^{15,16} A review of link worker and advocacy schemes in East London found that there was a need to balance “interpreting” and “advocacy” functions in service delivery models to allow responses to wide-ranging and changing physical and mental health conditions.⁶⁵

Interventions with limited evidence on reducing ethnic health inequalities

Interventions that did not demonstrate evidence of a reduction in ethnic health inequalities include interpreter services,^{54,61} thalassaemia screening,^{55,56} lay support for post-natal depression,⁴⁷ and Sweet Mother for mother-infant attachment.⁵⁸

From interviewing pregnant women under the continuity of care model who had accessed interpreter services, Rayment-Jones et al. found that women had limited options in selecting an interpreter, suspicion around the level of confidentiality of interpreter services and questioned how well professional interpreters were able to interpret what they were trying to relay to the healthcare professional during appointments.⁵⁴ This confirms evidence from previous studies on interpreter services for ethnic minority women with limited English proficiency.²⁵ They suggested that all women should be made aware of the possibility of direct self-referral to maternity services at the first point of contact with health services, using language-appropriate information, interpretation and translation technologies.

The uptake of screening and genetic counselling for thalassaemia was low in Pakistani couples of Muslim faith in both iterations of the audits conducted by Modell and colleagues with possible explanations of ethnic and religious stereotyping.^{55,56} A report on maternity experiences of Muslim women from racialised minority communities found the provision of maternity services to be variable, and inequitable, with inequalities being persistent throughout antenatal, intrapartum and postnatal care. Some of the negative experiences include inaccessibility of antenatal information, experiences of discrimination and not being listened to.⁷⁶

Finally, the pilot small-scale Sweet Mother intervention for West African migrant women lacked a comparator group with only five mother and baby pairs completing the intervention limiting the inference on effectiveness to reduce ethnic health inequalities.⁵⁸ We could not find evaluated studies of similar interventions targeting Black African women and this group is known to experience adverse outcomes in perinatal mental health. Previously, calls for the use of managed care networks for joined-up mental health services targeting Black women to improve perinatal mental health have been published, but it is not clear how these were implemented.⁹⁷ The current LMS have a service role in working across agencies to ensure women at risk of adverse perinatal mental health receive appropriate care promptly.²³

Mapping of the interventions to the conceptual framework

Most of the identified evaluated interventions were at the patient and provider level of our framework. Only four studies on models of care and a parenting antenatal and postnatal intervention were mapped to all levels of the framework and demonstrated the potential to reduce ethnic health inequalities.^{48,49,59,62} Interventions focusing on pregnant women and their babies will only yield marginal gains in achieving equity of outcomes for all women regardless of their ethnicity. This is because these interventions will not address structural and institutional racism within healthcare as the focus is on “broken patients” who need fixing and not institutional/structural racism in healthcare.^{98,99} The focus on individual level interventions with a lack of interventions at the policy and community levels has also been reported elsewhere in an international scoping review of anti-racism interventions in healthcare settings.⁹⁸

Structural and institutional racism are not confined to the health sector only. As such, actions within and between sectors, at the local, regional, national and, to an extent, international levels are needed to influence the social and economic landscape that will ensure the health and wellbeing of mothers and their babies.⁹⁸ Intersectionality, a theoretical framework for understanding how multiple identities of race, gender, sexual orientation, socioeconomic status and disability interact to create unique patterns of oppression, provides an analytical framework for exploring the drivers of ethnic health inequalities. In England, the recently announced ‘Family Hubs’ which will target 75 local authorities with high levels of deprivation creates a platform for an intersectional framework.¹⁰⁰ This place-based intervention will address some of the social determinants of health as it considers multiple factors of disadvantage in understanding ethnic health inequalities with considerations of peoples’ “intersecting” identities across different axes of society. For instance, a recent nationwide survey of Black women’s experiences of maternity services in the United Kingdom found that of the 1,340 respondents, 52% had a bachelor’s degree, 74% were employed and 65% had an income of £40,000 and above.¹⁰¹ The respondents in the survey were on average of a higher social economic class in comparison with other similar studies, yet they reported racism, racial assumptions, stereotyping and micro-aggression when accessing in-patient maternity services.¹⁰¹

To conduct intersectional analyses, ethnicity information is required to understand the ethnic groups at greatest risk of experiencing health inequalities, target interventions, and understand who benefits from the interventions. In this review, reporting of ethnicity in the included studies varied from large aggregations of White vs. non-White to the five categories of White, Black, Asian, Mixed and Other. Some study authors were able to use the 16-level ONS ethnic reporting,¹⁰² others used groupings to reflect migration patterns such as African Indian, East Asian^{51,55} and others adopted countries of birth.^{53,62} These reflect how ethnicity recording has evolved over the years in healthcare records

and the change from traditional approaches of providers assigning ethnicity and more contemporary approaches of self-identification. For some of the studies, the data did not permit further disaggregation beyond White vs. non-White to prevent deductive disclosure due to small sample sizes.^{47,50} Ongoing projects such as the NHS Digital Data Maturity Index are expected to improve the quality of recorded ethnicity in health records.⁹⁶

Evidence and research gaps

The maternity policy landscape has changed significantly in the last four decades. The current maternity transformation programme was set up to achieve the visions of the National Maternity Review: Better Births, 2016.²¹ This has its roots in the 1993 Changing Childbirth policy of ensuring personalised continuity of care for pregnant women.^{18,21} Notwithstanding, to the best of our knowledge we are not aware of any detailed policy analysis of maternal and neonatal care.

Several gaps in evidence and research persist. We mapped only two interventions to the policy level of our conceptual framework. Interventions at this level can influence laws, regulations, and or resource allocation on a national basis. Other gaps include a lack of interventions at the community level targeting institutional and interpersonal racism. The current status of some of the interventions remains unclear. Some of the small-scale research-led interventions could not be traced to a full evaluation or implementation such as link workers for weaning of South Asian infants or Sweet Mother intervention.^{57,58} In addition, we identified unevaluated interventions. This suggests there may be publication bias with large-scale evaluated interventions being more likely to be published.

Only three included studies explicitly specified the reduction of ethnic inequalities in their aims.^{49,50,62} Without explicitly having this as an aim, the purpose of the evaluation of the intervention may not be to demonstrate the effectiveness of the intervention in reducing ethnic health inequalities. None of the studies measured ethnic health inequalities at baseline. Furthermore, most of the interventions were evaluated in single studies and mostly using observational and qualitative study designs that are not the gold standard methods for evaluating interventions. Although the conceptual framework we used considers other ways in which the intervention may affect perinatal outcomes (e.g. through confounding), only four heterogeneous studies reported adjustment for confounders in their estimates.^{16,45,47,48} These make it difficult to conclude whether the interventions were effective in reducing ethnic health inequalities. Where studies have clearly stated aims to improve maternal health for specific ethnic groups, most have targeted Asian pregnant women,^{16,51,52,57,60} only one study targeting West African migrant mothers and no other interventions for other ethnic groups.⁵⁸ This makes it difficult to interpret findings on changes to ethnic health inequalities for specific ethnic groups.

There is a large regional divide in the volume of included studies with half reported in London.⁴⁵⁻⁵⁴ Although London is the most ethnically diverse region in England,¹⁰² the outcomes may not be generalisable to all regions of England due to differences in migration in other regions; variations in local policy and practice; or levels of community-based support, and the role of structural racism in less ethnically diverse regions.

We did not identify any pre-pregnancy interventions at the population level and only identified one intervention in primary care, the SCT screening at pregnancy confirmation.⁴⁵ General practitioners are the “gatekeepers” of the NHS as they make referrals to community, secondary and tertiary care. There is now a new service specification for Maternal Medicine Network launched in 2021.¹⁰³ It is a multidisciplinary network of all medical specialities and allied health professionals that may be involved in the care of a pregnant person. It also recognises the role of GPs in pre-pregnancy, pregnancy, and post-pregnancy health with measures of equality in outcomes, which can provide baseline measures of existing ethnic health inequalities.¹⁰³

Decades of evidence from patient surveys on experience and satisfaction with obstetric services show a decline in positive responses from ethnic minorities while recommendations on tackling interpersonal and institutional racism have persisted.^{19,104} Yet, none of the included studies explicitly targeted racism. This may be because such interventions are usually complex interventions with “multiple components involved; different range of behaviours targeted; multiple expertise and skills required by those delivering and receiving the intervention; the number of groups, settings, or levels targeted; or the permitted level of flexibility of the intervention or its components”.¹⁰⁵

From our stakeholder engagement and the existing literature, Black, Asian and minority ethnic women often seem to internalise racism and accept the blame. This is compounded by cultural and religious beliefs which prevent reporting and seeking legal action. Although recommendations from included studies have emphasised cultural competency training for staff,^{56,59,60} this may not address unconscious/unintended bias amongst staff in decision making leading to inequalities in outcomes. A review of race equality training in mental health services in England looked at a framework of diversity, cultural competence and cultural awareness, with a significant emphasis on improving cultural knowledge and changing negative attitudes on race, and found it had a limited impact on the experiences of service users.¹⁰⁶ This approach does not acknowledge the role that racism plays in perpetuating inequalities. It suggests that the problem of inequalities is the result of the person’s cultural difference and not the racial bias of an institution’s processes and practices.⁹

Finally, we identified 17 other unevaluated interventions, mostly local interventions, targeting ethnic inequalities relating to maternal and neonatal outcomes, such as group antenatal care (Pregnancy Circles) for continuity of care during the antenatal

period;⁶⁷ continuity of care models for Roma/Gypsy Travellers in Cornwall; and ChatWorks, a project in Hackney, London that offers perinatal mental health services for Black African or Black Caribbean pregnant women.⁷⁵ It is not clear why some of these interventions remain unevaluated. It may be that they are designed as “service improvement” rather than research, (but we would question whether any investment in interventions should be justified without some form of evaluation), or due to a lack of support or limited funding for evaluation. Implementation leads for these interventions can be supported in evaluation, especially of those that demonstrate high user satisfaction and acceptance.

Strengths and limitations

This review utilised a comprehensive search of five appropriate electronic databases without restrictions. We also conducted backwards and forward citations of included studies to identify relevant interventions to reduce ethnic health inequalities in maternal health and engaged with key stakeholders throughout the review.

Our conceptual framework was based on a systematic review by Clarke and colleagues.³⁶ Their review was an overview of reviews analysing 30 years of interventions aimed at reducing ethnic inequalities based on studies published in the USA. A key strength of this framework is that by using evidence over a long period from the broad health and inequalities field, we have identified levels that go beyond what has currently been used in maternal care in the UK, allowing us to identify gaps where gaps in interventions exist. The findings of this review indicate that current interventions focus broadly on the patient and provider levels, with limited interventions at the microsystem, organisation, and policy levels. Also, there is a lack of focus on neonatal outcomes. By identifying these levels a priori, we have been able to recognise these potential gaps.

There are limitations to our framework. First, the pre-specified levels may be restrictive, and the potential for other, unspecified levels of intervention should not be discounted. Moreover, the review by Clarke and colleagues included sub-categories of strategies and tactics underpinning the interventions.³⁶ We have not adopted this approach in mapping the identified interventions to the framework which could lead to the misclassification of the interventions to the levels in the framework. However, since this review focused on a distinct healthcare domain, unlike the Clarke review, misclassification errors should be minimal. Second, the overview of reviews by Clarke et al predominantly focused on studies published in the USA with a different healthcare system to the UK. We adjusted the framework level definitions to reflect the UK healthcare system, but the sources of ethnic inequalities in healthcare are determined by structural, institutional, and interpersonal racism that have been proven in both USA and UK healthcare settings.^{9,25,37,38,104} In addition, similar levels as proposed by Clarke et al were adopted in an international scoping review of anti-racism interventions in healthcare settings.⁹⁸

Other limitations of this review include the inclusion of mainly academic peer-reviewed literature. We can only deduce from the interventions described in the literature and not all those utilised in practice if they are yet to be evaluated and/or published. Although we conducted grey literature searches, we mainly identified experiences of services or unevaluated interventions. In addition, scoping reviews do not complete some processes in duplicate such as data extraction, quality assessment and intervention coding. We ensured, however, that the data extraction process was calibrated with high agreement amongst screeners (97%) and a sample was checked by a second reviewer. We also contacted experts to identify available local and national interventions, however, we did not identify additional studies meeting our inclusion criteria. We acknowledge that there may be bias in the reporting of effective interventions, with successful interventions more likely to be reported. Despite this limitation, we believe that our search was substantial enough to ensure that all key relevant policy interventions were identified.

Finally, the evidence synthesis in this review has focused on evidence on pregnant women, mothers and babies from minority ethnic groups. We acknowledge this may not be representative of all pregnant people.

Recommendations for policy and practice

Findings from the review	Recommendations	Action
We identified 19 evaluated interventions from published articles. Through our grey literature searches and contact with experts, we were able to identify 17 additional interventions which have not been evaluated. It is possible that we have not captured all the interventions that exist. More so, reporting bias may mean that some interventions that were not successful may not have been reported.	An interactive portal on the NHS Improvement Maternity Transformation website for relevant teams and organisations to register their interventions from the feasibility/pilot stage using an appropriate framework is urgently required to capture what is ongoing across different parts of the country. This will avoid duplication of efforts and allow examples of good practice to be spread across the entire maternal and neonatal health system.	NHS England and NHS Improvement, Integrated Care System Leaders, NHS Race and Health Observatory
The quality of reporting of interventions varied across studies.	Intervention reporting should follow the appropriate checklist (such as the TIDier framework) for improved quality of reporting. This will improve evidence-based policymaking and commissioning of services	Researchers and peer-reviewed journal editors

Findings from the review	Recommendations	Action
Some interventions were designed and implemented with no consideration for how such interventions could be evaluated making it difficult to establish whether the interventions were effective.	Evaluation of local interventions should be built into the design (such as adequate data recording), and targets should be specific, measurable, achievable, realistic, and time-bound.	Integrated care systems leaders, local maternity systems NHS England and NHS Improvement
Not all evaluated interventions were designed to reduce ethnic health inequalities as inequalities were not always measured at baseline.	A consensus on baseline measures of risk factors for inequalities in adverse perinatal outcomes as agreed by the Maternal Medicine Networks should be adopted when designing and evaluating interventions. This will permit clear evidence of the effectiveness of interventions in the reduction of ethnic health inequalities if these data are collected and measured at baseline and during the evaluation of interventions.	Research funders such as NIHR and MRC, Research groups in implementation science, Maternal Medicine Networks
There is a lack of detailed policy to tackle ethnic health inequalities. Most relevant is the implementation of Better Births by Local Maternity Systems in 2019	Detailed policy analysis is urgently required to ensure a specific policy targeted at reducing ethnic health inequalities is co-developed and rolled out to all stakeholders.	NHS England and NHS Improvement
Ethnicity is not often recorded accurately.	Ethnicity recording in health records should be improved and consistent.	NHS Digital

Recommendations for research

Increased investment in research designed to reduce ethnic health inequalities in maternal and neonatal health is urgently required as this review highlights the limited peer-reviewed evaluation of interventions. Below are the main research gaps that can frame the future research agenda in this field:

Findings from the review	Recommendations	Action
<p>We identified 19 evaluated interventions from published articles. Through our grey literature searches and contact with experts, we were able to identify 17 additional interventions which have not been evaluated. It is possible that we have not captured all the interventions that exist. More so, reporting bias may mean that some interventions that were not successful may not have been reported.</p>	<p>Investment in research to reduce ethnic health inequalities in maternal and neonatal health is urgently required. Complex interventions that incorporate a patient's socio-economic context are urgently needed to move the focus away from the patient and towards the community where they live and the institutions they navigate in accessing care.</p> <p>Researchers seeking to address improvements in maternal and neonatal outcomes should conduct health inequality impact assessments.</p> <p>Researchers should be encouraged to publish negative findings of interventions</p>	<p>Research funders Peer-reviewed journal editors</p>
<p>Not all evaluated interventions were necessarily designed to reduce ethnic health inequalities as these inequalities were not always measured at baseline.</p>	<p>Interventions aimed at reducing ethnic health inequalities should clearly state this in the aims and objectives of the evaluation.</p> <p>When designing and evaluating interventions that may impact ethnic health inequalities, baseline data on ethnic health inequalities should be collected. This will permit clear evidence of the effectiveness of interventions in the reduction of ethnic health inequalities.</p> <p>Beyond the reduction of ethnic health inequalities, it is also important to assess if interventions do not worsen ethnic inequalities if any exist at baseline.</p>	<p>Researchers, healthcare professionals and policymakers in the design and evaluation of interventions. Implementation Science Research Teams, Research Funders</p>
<p>Few of the studies included complete evaluation findings. There was limited evidence of the links between the evaluated interventions, implementation, and changes in practice.</p>	<p>Taking an implementation science perspective could be valuable to bridge the "know-do gap" i.e. the gap between what we know through research and what is implemented. Implementation science aims to bridge this gap by getting evidence-based findings out into practice promptly.</p>	<p>Implementation science research teams, Research funders</p>

Findings from the review	Recommendations	Action
Interventions at the organisational level targeting structural and institutional processes which perpetuate racism and ethnic health inequalities are lacking.	Interventions targeting institutional and interpersonal racism at the organisational level are urgently needed. Using Hassen and colleagues' conceptual framework for strategies in developing and implementing anti-racism interventions, a multi-level, long-term approach going beyond one-off cultural competency training with buy-in from senior leadership with evaluation embedded is the first step.	Implementation science research teams, Research funders
Limited specific interventions for Black African and Black Caribbean, Roma and Gypsy and Mixed ethnic groups, Migrants, Refugees and Asylum seekers were identified.	Co-production of interventions and research with women from ethnic minority groups, in particular Black African and Black Caribbean, Roma and Gypsy ethnic groups who are underrepresented in targeted interventions are required. These can include the adaption of known effective interventions such as the culturally adapted CBT for postnatal depression for South Asian women if feasibility results are replicated in the recently concluded multisite trial.	Funders, research teams, VCSE groups, Maternity Voices Partnership, NHS England and NHS Improvement
There is a lack of detailed policy to tackle ethnic health inequalities. Most relevant is the implementation of Better Births by Local Maternity Systems in 2019	Detailed policy analysis is urgently required to ensure a specific policy targeted at reducing ethnic health inequalities is co-developed and rolled out to all stakeholders.	Implementation Science research teams, research funders
Quality of reporting of interventions varied across studies. Small sample sizes limited further stratification of outcomes by ethnicity.	Where the data permits, disaggregated ethnic groups should be adopted using the 2021 ONS census classifications to understand if only certain ethnic groups benefit from evaluated interventions.	Implementation science research teams and research funders

Findings from the review	Recommendations	Action
Quality of reporting of interventions varied across studies. We found some use of acronyms such as BME and BAME and the use of non-specific groupings such as non-White	Improving ethnicity reporting where the data permits with the use of appropriate language (such as the NHS Race and Health Observatory language principles) is needed for future studies to appreciate the different social and complex needs of these groups.	Implementation science research teams, Research funders
Quality of reporting of interventions varied across studies, reporting, and adjustment for confounders	Adjustment for appropriate confounding variables in quantitative research is vital to ensure robust findings.	Implementation science research teams, Research funders
Studies of evaluated national policy interventions such as midwifery continuity of care were predominantly from South London.	Evaluation of national policy-driven interventions from regions beyond London is needed to improve the generalisability of the findings to different populations.	Implementation science research teams, Research funders, NHS England and NHS Improvement
Lack of population health-based interventions	The recent 'Family Hubs' which will target 75 local authorities with high levels of deprivation can serve as a platform for population-level interventions to improve pre-conception health by addressing structural level barriers such as access to services. ¹ It also provides a platform for linking up local maternity systems and the integrated care systems to target specific population needs.	Integrated care system leaders, Local maternity system leaders and Research funders

Conclusion

Maternity and Neonatal services in England are under intense scrutiny with renewed efforts to tackle sustained ethnic health inequalities. This review provides a striking picture of the limited evidence of evaluated policy-driven interventions to tackle ethnic health inequalities in maternal and neonatal outcomes. In over four decades, only 19 studies have reported the results of interventions, with only eight studies demonstrating the potential for the reduction in ethnic health inequalities. These eight studies included models of care (n=3)^{48,49,62}, health advocacy/link workers/lay support (n=2),^{52,57} first trimester screening for placental dysfunction (n=1),⁵⁰ vitamin D supplementation,⁴⁶ and perinatal mental health (n=1)⁶⁰. One of the models of care interventions and the first trimester screening for placental dysfunction intervention are linked to the current policy priority of the Maternity Transformation Programme.^{48,50,87}

The status of some of the small-scale interventions remains unclear.^{57,58} For both the first trimester screening for placenta dysfunction and culturally adapted cognitive behaviour therapy for South Asian women, multi-site trials are underway.^{91,93} Multisite studies from regions outside of London on midwifery-led continuity of care as a model of care are urgently needed to confirm the generalisability of the review findings.

In the past, policy has not always translated into practice uniformly, with economic constraints leading to fragmented care e.g., in the provision of interpreter services despite national guidelines on language interpretation and translation.¹⁰⁷ With the increasing diversity of the population, and a growing number of languages being spoken in many regions, there is a pressing need for local maternity systems to accurately assess the communication and language needs of their local population, and develop innovative ways to respond to them. Approaches that warrant further development include culturally adapted CBT for specific ethnic groups; health advocacy; link workers; maternity peer support for migrants, asylum-seeking and refugee women; and the role of a Cultural Liaison Midwife.

The incoming integrated care systems can ensure the connectedness of local maternity systems with population health systems by creating a linked place-based model that will foster an improved understanding of the wider determinants of health in the drivers of ethnic health inequalities. Improved ethnic recording and socio-economic position data across sectors will permit inter-sectoral and intersectional analysis of the different drivers of ethnic inequalities. Reporting and maintenance of a repository of local and national interventions to reduce ethnic inequalities will improve awareness of ongoing interventions and allow replication of evaluated effective interventions across the maternal system with appropriate implementation change models.

Better Births provides a solid foundation to build upon.²¹ Beyond achieving the targets of 75% of Black, Asian and minority ethnic women receiving midwifery-led continuity of care by 2024, a specific policy on reducing ethnic health inequalities for Black, Asian and minority ethnic women is urgently required, as is a policy that addresses institutional racism, to ensure unfair and unjust policies and practices are eliminated from England's maternal system.

Figures

Figure 1. Conceptual framework to map identified policy interventions at various levels of the maternal and neonatal care pathways in England

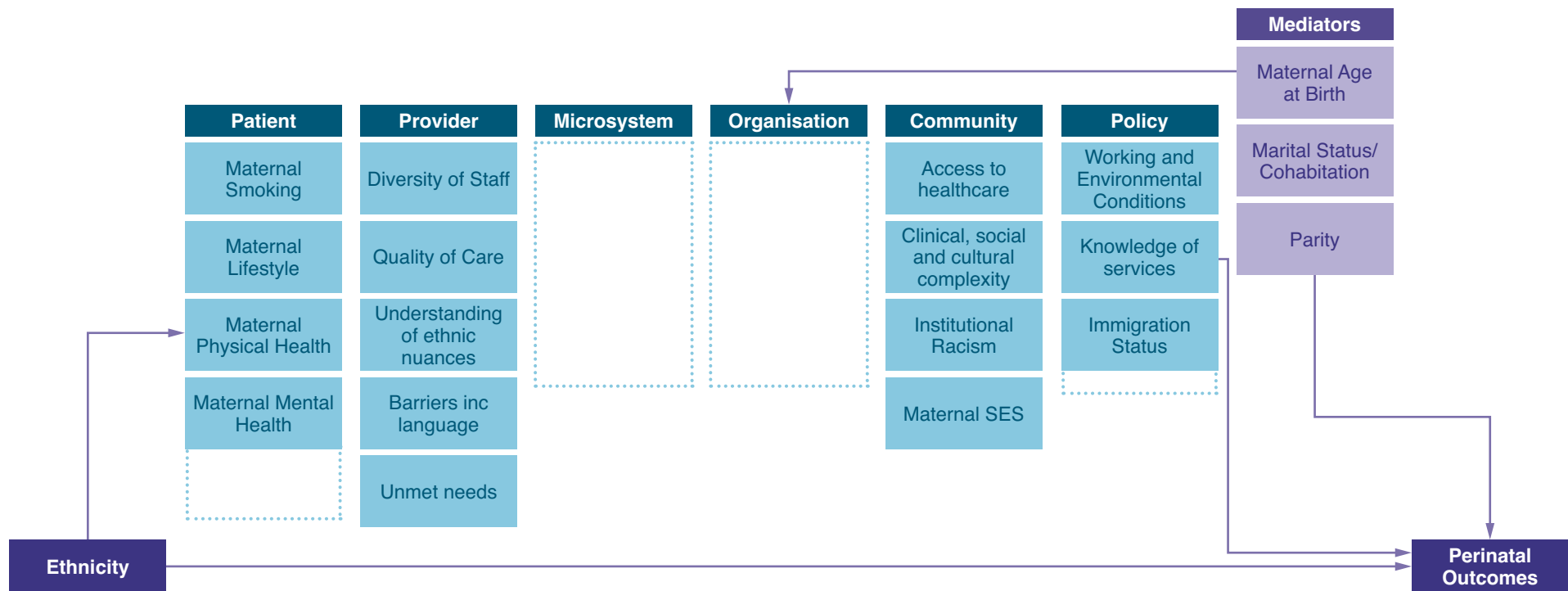


Figure 1. shows an a priori conceptual framework showing a causal pathway. This framework was informed by evidence on the levels in patient care that are amenable to interventions in reducing ethnic health inequalities in perinatal outcomes³⁵. We used this framework to guide our data extraction and synthesis.

Figure 2. PRISMA Flow diagram of included studies

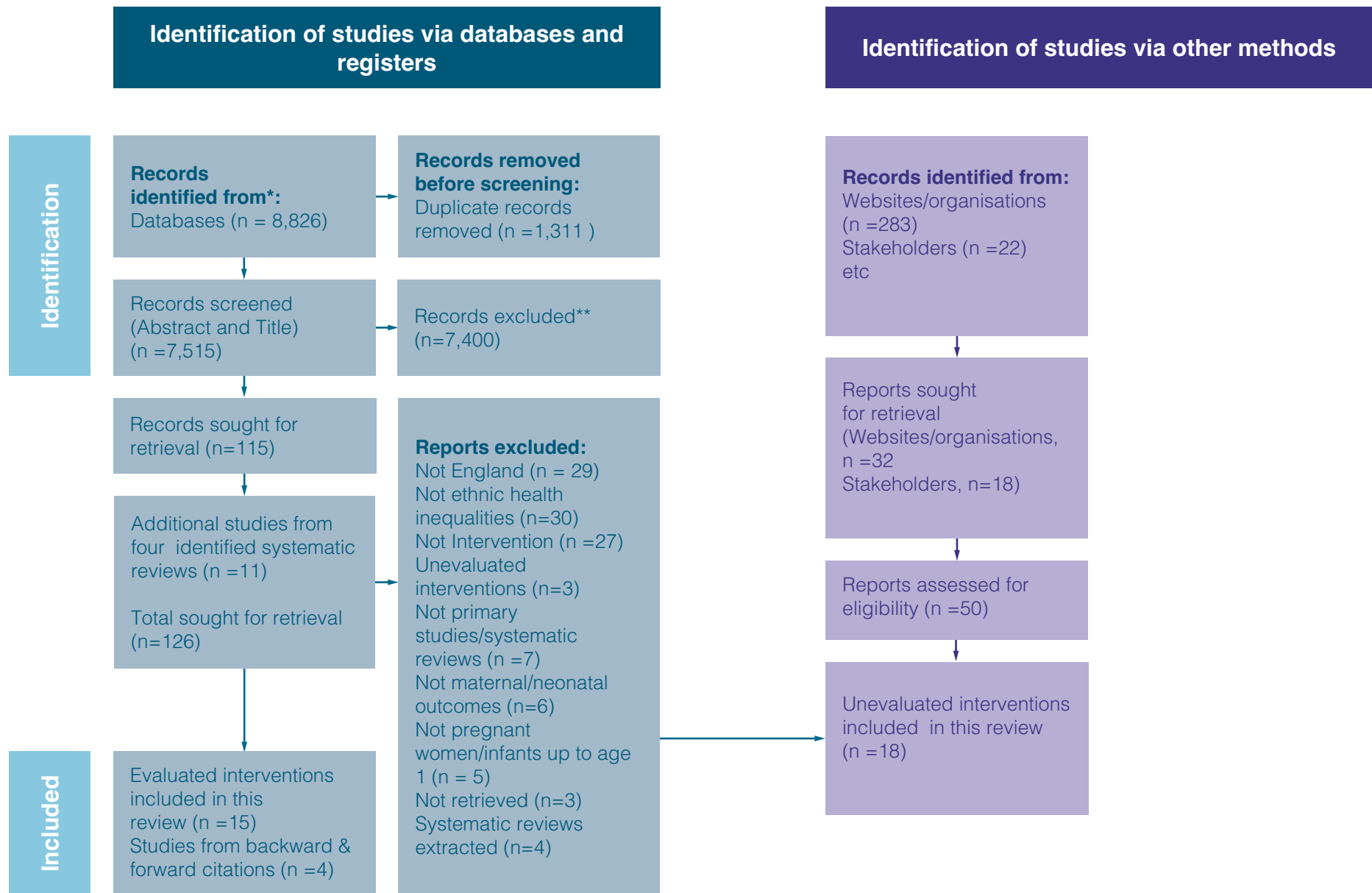


Figure 3.1 Characteristics of included studies: Number of studies by year of publication and NHS England region

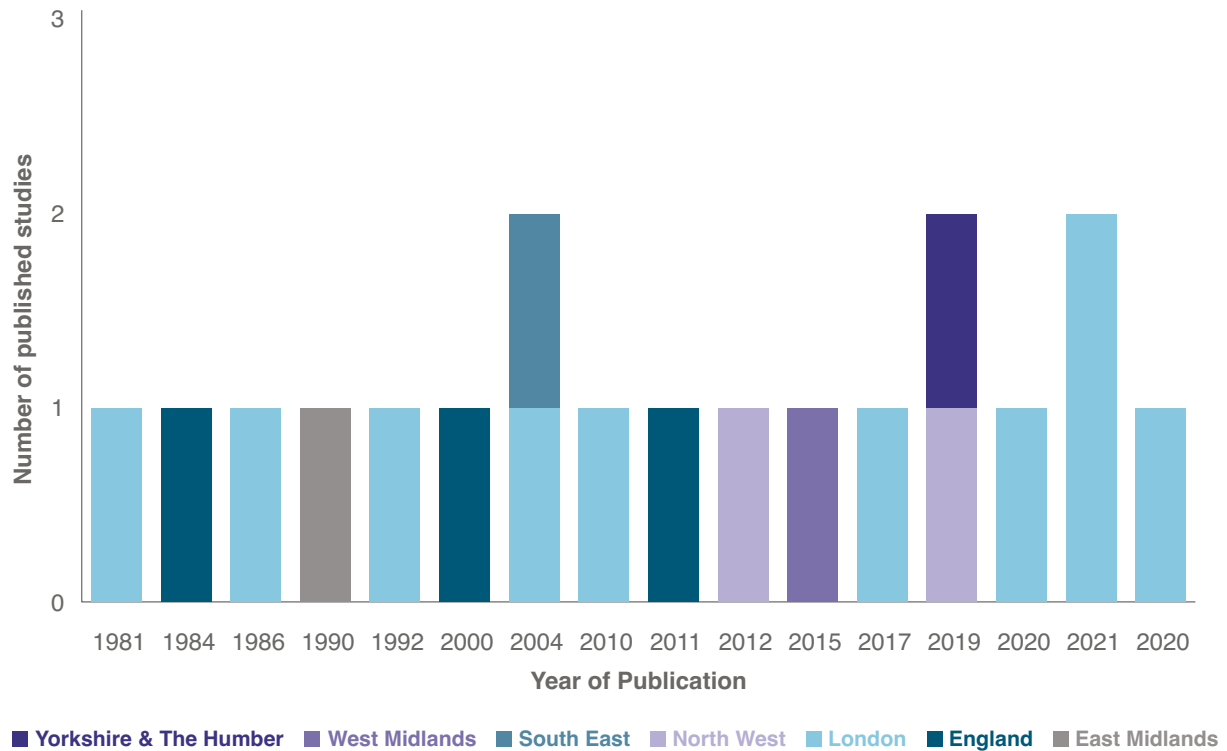


Figure 3.2 Characteristics of included studies: Number of studies by intervention category and levels of the conceptual framework

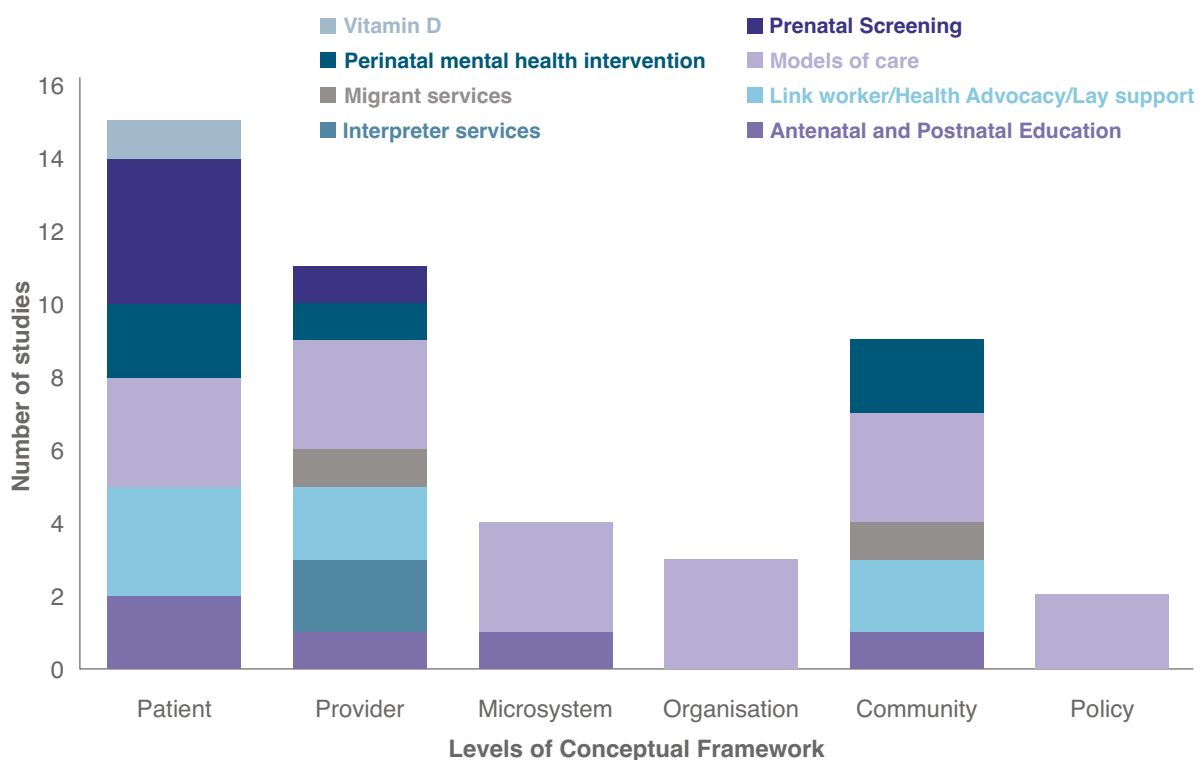
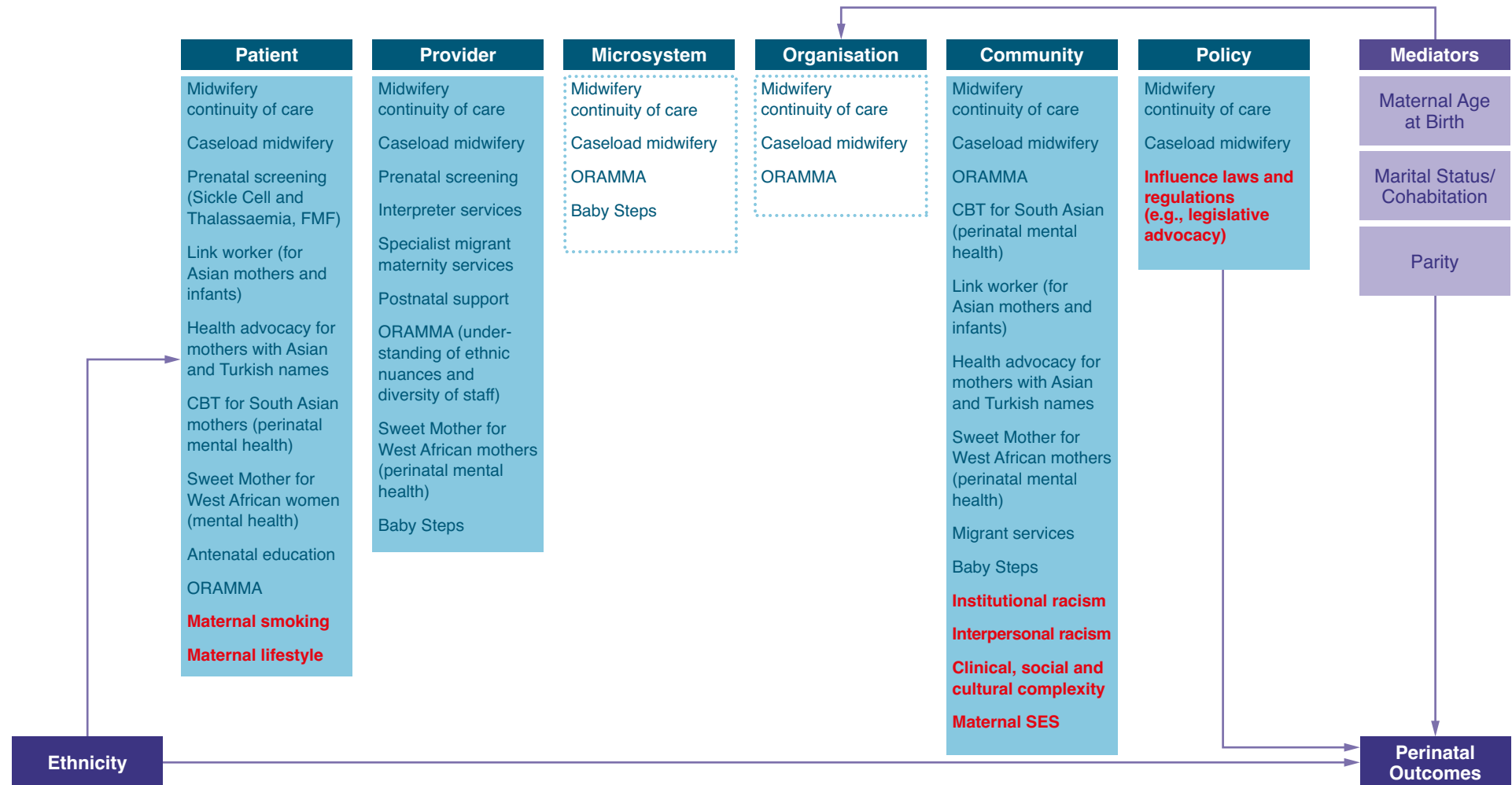


Figure 4. Mapping of identified interventions to a priori conceptual framework



Missed potential opportunities are shown in red text

Abbreviations: CBT – Cognitive Behaviour Therapy; ORAMMA – Operational Refugee And Migrant Mothers Approach

Tables: included studies

Table 4.1 Characteristics of included studies by intervention category

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
Models of care							
Homer 201749	London	Cohort; Primary data collection	2568(14-50);[1997-2009]	Black African, Black Caribbean, Black British, Asian, Mixed, Other and Unknown (63.1%)	Mothers and Babies	To compare outcomes for women from Black, Asian and Minority Ethnic (BAME) groups with outcomes for White women.	Albany Midwifery practice model (Antenatal and Postnatal visits and support including home visits)
Hadebe 202148	London	Cohort; Hospital records	LEAP Area Caseload: 230 pregnancies, LEAP traditional care: 293, Non-LEAP (All care) : 8,430 pregnancies (NR);[2018 - 2020]	White, Black, Asian, Mixed, Other;(LEAP - 47.8%, LEAP traditional - 42.8%, non-LEAP (All care) - 37.8%)	Mothers and Babies	To compare the effect of caseload midwifery with standard care on maternal and newborn outcomes in this cohort of women.	Targeted caseload midwifery

Mapping Existing Policy Interventions

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
Sioti 201962	Yorkshire & The Humber	Mixed method evaluation	21(18-34); [Feb 2018-Feb 2019]	Democratic Republic of Congo, Eritrea, India, Iran, Kurdistan, Kuwait, Nigeria, Pakistan, Saudi Arabia, Sri Lanka, Sudan, Syria and Yemen.	Mothers and infants	To ensure a safe journey to motherhood, improve access and delivery of maternal healthcare for refugee and migrant women, and improve maternal health equality within the European Union.	ORAMMA - Model of care for migrant, asylum-seeking and refugee women (healthcare, social care support and peer support)
Health advocacy/lay Support/link worker							
Mason 199016	Midlands	Cross-sectional survey; Primary data collection	485(NR);[1985-1986]	Asian women; (100%)	Pregnant women, Mothers and Babies	To measure the improvement in Asian patients' understanding of health care during and following pregnancy and measure the resulting improvement in the health of babies due to increased knowledge in the Asian population, by measuring any increase in birthweight and condition of babies.	Asian Mother and Baby Campaign - Link workers
Parsons 199252	London	Unknown; Hospital records	1000(NR);[1986]	Born in Asia or Turkey; (100%)	Pregnant women	To evaluate the advocacy project with respect to influencing hospital policy and practice.	Multi Ethnic Women's Health Project- Health advocacy

Mapping Existing Policy Interventions

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
Wiggins 200447	London	RCT; Primary data collection	731 (NR);[1999]	Black or minority ethnic; (42.5%)	Mothers	To determine whether increased postnatal support could influence maternal and child health outcomes.	Postnatal support
Smith 200457	South East	Qualitative; Other	30(3 months);[2000]	British Pakistani; (100%)	Babies	To enable parents of Pakistani origin to establish healthy weaning patterns for their children. Evaluation of the effectiveness of the intervention measured whether a child was established on a healthy weaning diet, and therefore achieved the intervention's aim.	Weaning intervention delivered via link workers
Prenatal screening							
Modell 198455	England	Cross-sectional (National Audit); Hospital records	200(NR);[1977-1981]	Cypriot, Indian, Pakistani and Italian; (100%)	Pregnant women	To determine the effect of foetal diagnostic testing on the birth rate of thalassaemia major in Britain	Number of children born with thalassaemia major was compared with the number of foetal diagnostic tests carried out, their outcome for the main ethnic groups at risk

Mapping Existing Policy Interventions

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
Modell 200056	England	Cross-sectional (National Audit); Other	400(NR);[1990-1995]	Cypriot, Indian, Pakistani, Bangladeshi and Other (Italian, Other Mediterranean, Chinese, Other South-East Asian, African-Caribbean, Middle Eastern);(100%)	Pregnant women and babies	To determine the proportion of couples at risk of major beta thalassaemia who received timely risk detection and counselling during pregnancy	Audit from the UK Confidential Enquiry into Counselling for Genetic Disorders.
Dormandy 201045	London	RCT; Other	1454(>18);[2005-2006]	North European, South or South East Asian, African/ Caribbean, South European, Other and Mixed; (60.3%)	Pregnant women and Fathers	To assess the effectiveness, cost-effectiveness, acceptability and feasibility of offering, universal antenatal sickle cell and thalassaemia (SCT) screening in primary care when pregnancy is first confirmed and to model the cost-effectiveness of early screening in primary care versus standard care.	Universal antenatal SCT screening in primary care when pregnancy is first confirmed.

Mapping Existing Policy Interventions

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
Liu 202250	London	Cohort; Hospital records	20651(NICE: 32.6 (29.2-35.9); FMF 32.8(29.4-35.9));[2016-2020]	White, Black, Asian and Mixed/Other; (34.4%)	Pregnant women	To assess the impact of the FMF first trimester screening algorithm for pre-eclampsia on health disparities in perinatal death among minority ethnic groups.	First trimester screening algorithm for placental dysfunction
Vitamin D supplementation							
Maxwell 198146	London	RCT; Primary data collection	126(NR);[NR]	Asian; (100%)	Pregnant women	To investigate the effect of vitamin D supplementation on maternal and foetal nutrition as measured by maternal weight gain, infant birth weight, and plasma levels of retinol binding protein (RBP) and thyroid binding prealbumin (TBPA), which are considered to be sensitive protein markers of nutritional status.	Supplementary vitamin D administered in
Perinatal mental health interventions							
Khan 201960	North West	RCT; Primary data collection	17(20-40);[2012-2013]	British South Asian (100%)	Mothers	The aim of this study was to assess the acceptability and overall experience of the Positive Health Programme by British South Asian mothers.	Group psychological intervention for postnatal depression

Mapping Existing Policy Interventions

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
O'Shaughnessy 201258	North West	Qualitative	NR(17-32); [NR]	Women from The Gambia, Sierra Leone, Ivory Coast and Nigeria.	Mothers and infants	To explore the impact of the intervention on the quality of the mother-infant relationship, foregrounding views of mothers and babies (in the mothers' minds).	Perinatal mental health support
Migrant services							
Filby 202053	London	Qualitative; Primary data collection	10(23-37);[NR]	Vietnamese, Chinese, Albanian, Nigerian, Afghan and Yemeni	Pregnant women	To evaluate the specialist migrant maternity service provided by Kings College Hospital London based upon users' experience and satisfaction.	Specialist migrant maternity service
Interpreter services							
Barnes 201161	England	Mixed methods	1304(<16-24);[2007-2009]	White, Black, Asian , Mixed or Other (18.9%)	Mothers, Nurses and Interpreters	To investigate whether the expected levels of delivery are attained and whether the nature of the crucial client–nurse relationship is affected.	Interpreters to deliver Family-Nurse Partnership
Rayment-Jones 202154	London	Qualitative; Primary data collection	21(18-34);[NR]	Asian, Black African, White Other (62.5%)	Pregnant women and family members	This study explores whether or not women with social risk factors find these interpreter services acceptable, accessible and safe, and to suggest solutions to address challenges.	Interpreter services

Author Year	NHS England Region	Study Design; Data Source	Sample size (age in years);[dates data collection]	Ethnic minority group; (% of total sample)	Population	Aim of study	Intervention
Antenatal and postnatal education							
Brookes 201559	West Midlands	Qualitative; Primary data collection	14 parents(3 fathers, 11 mothers),	Pakistani, Indian, Chinese, Oromo(Cultural group in Ethiopia), Somali, Bangladeshi, Caribbean(St Vincent)	Parents	To identify the experience and perceived outcomes of the Baby Steps programme for minority ethnic parents; To identify how the delivery of the programme was working for this group of parents	Perinatal education programme, Interpreter services
McEnergy 198651	London	Cohort	69 (18-40); [1980-1982]	Pakistani, East African Asians	Mothers and infants	Assessing the effects of a special antenatal education programme on the subsequent outcome and infant health, taking religion, low rate of antenatal attendance, importance of men as instructors and language into account and avoiding cultural conflict.	Antenatal health education

NR – Not reported; FMF – Fetal Medicine Foundation; RCT – Randomised clinical trial; SCT – Sickle cell and thalassaemia

Table 4.2. Categories of identified interventions and outcomes

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Models of care							
Homer 2017*49	Black African, Black Caribbean, Black British, Asian, Mixed, Other, Unknown	Albany Midwifery practice model (Antenatal and Postnatal visits and support including home visits)	None	Age, parity, council housing	The Albany Midwifery Practice demonstrated positive outcomes for women and babies among ethnic minority groups.	Planned place of birth, maternal labour and birth outcomes, neonatal birth outcomes (preterm birth, admission to neonatal unit, stillbirth, neonatal death, Apgar score, premature birth, breastfeeding)	Potential to reduce
Hadebe 202148	White, Black, Asian, Mixed, Other	Targeted caseload midwifery	Standard care	Inverse probability weighting on Interpreter needed, unknown ethnicity, respiratory comorbidity, previous instrumental birth	Caseload midwifery implemented in a deprived inner city community improved outcome.	Planned place of birth, maternal birth outcomes, neonatal birth outcomes (preterm birth, stillbirth, neonatal death, Apgar score, premature birth, breastfeeding)	Potential to reduce

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Sioti 201962	Democratic Republic of Congo, Eritrea, India, Iran, Kurdistan, Kuwait, Nigeria, Pakistan, Saudi Arabia, Sri Lanka, Sudan, Syria, Yemen.	ORAMMA - Model of care for migrant, asylum-seeking and refugee women (healthcare, social care support and peer support)			Better access to culturally appropriate and individualised care; improved interaction by MAR with alien healthcare system; improved communication due to involvement of same-gender MPS, low drop-out rate because of enhanced interaction with the ORAMMA care system	Quantitative: Gestational diabetes, hypertension, maternal complications, mental health, gestational age, place of birth, mode of birth, birthweight, APGAR score, neonatal admission, breastfeeding. Qualitative: experience with MPS, experience with the ORAMMA training	Potential to reduce
Health advocacy/lay support/link worker							
Mason 199016	Asian	Asian Mother and baby campaign	Saw both: a) community and hospital link workers, b) community link worker only, c) hospital link worker only, d) did not see a link worker (controls).	English proficiency	Women who had contact with link workers have slightly better perinatal outcomes.	Birthweight	No

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Parsons 1992 ⁵²	Born in Asia or Turkey	Multi Ethnic Women's Health Project- Health advocacy	Women who delivered at Mothers' Hospital before (1979) and after the intervention (1986), Women at Whipps Cross Hospital in 1986 and 1979	No	Health advocacy improves obstetric outcomes in ethnic minorities.	Proportion of antenatal length of stay, caesarean, induction and mode of delivery	Potential to reduce
Wiggins 2004 ⁴⁷	Black, minority ethnic, and Others	Postnatal support	Standard services	type of delivery, baby's gender, ethnicity, mother's education, existing support	Support health visitor intervention was popular with women, and was associated with improvement in some of the secondary outcomes.	Primary outcomes: Maternal depression, Child Injury, Maternal smoking; Secondary outcomes: Health service use of mother and index child, Maternal and child health, experiences of motherhood and child development, infant feeding, household resources	No

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Smith 200457	British Pakistani	weaning intervention delivered via the role of the link worker	None	N/A	Intervention was well received by families who like the continuity of contact and being able to relate to someone from the same cultural and linguistic group as themselves.	By age one: children should have varied diet, family foods, drinking juice/water from cup, finger feeding	Potential to reduce
Prenatal screening							
Modell 198455	Cypriot, East African Asian (Indian), Pakistani and Italian	Fetal diagnostic screening	None	No	Significant proportion of thalassaemia-major births prevented among Cypriot and East African Asian groups but less for Pakistani.	Proportion screened	No
Modell 200056	Cypriot, Indian, Pakistani, Bangladeshi and Other (Italian, Other Mediterranean, Chinese, Other South-East Asian, African-Caribbean, Middle Eastern)	Genetic screening for thalassaemia during pregnancy	None	No	The service is not provided to many British Pakistanis and Bangladeshis because of ethnic stereotyping	Abortion, Miscarriages, Live birth with/without thalassaemia.	No

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Dormandy 201045	North European, South or South East Asian, African/ Caribbean, South European, Other and Mixed	Group 1: primary care with parallel father testing; Group 2: primary care, sequential testing; Group 3: secondary care, sequential testing	Standard care	No	Offering antenatal SCT screening as part of pregnancy-confirmation consultations significantly increased the proportion of women screened before 10 weeks in comparison with standard care	Proportion screened	Unclear
Liu 202250	White, Black, Asian and Mixed/ Other	Fetal Medicine Foundation (FMF) first trimester screening programme for placental dysfunction	Standard care	No	The perinatal death rate fell in the non-White group in those with the screening algorithm in comparison with standard care but did not fall in the White group.	Stillbirth; neonatal death and perinatal death stratified by screening method & maternal ethnicity	Potential to reduce

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Vitamin D supplementation							
Maxwell 198146	Asian women	Vitamin D intervention	Asian women without Vitamin D intervention		Supplemented Asian women gained weight faster and their infants weighed more at birth than non-supplemented Asian women.	Birth weight; maternal weight gain; protein measurement.	Potential to reduce
Perinatal mental health interventions							
Khan 201960	British South Asian	Culturally-adapted CBT-based group intervention	None	N/A	The participants found the culturally relevant psychological intervention acceptable and felt that the group sessions provided social support and helped to gain self-confidence.	Thematic analysis of interviews, severity of depressive symptoms and quality of life scores.	Potential to reduce

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
O'Shaughnessy 201258	Women from The Gambia, Sierra Leone, Ivory Coast and Nigeria.	A two-hour weekly group led by two psychologists featuring time for mothers to talk about daily stresses or issues at the forefront of their minds, providing containment. Volunteers visited weekly, offering practical and emotional support.	None	N/A	A positive shift in the quality of Mother-Baby attachment relationships; improved psychological well-being of mother and baby; reduced social isolation.	The Infant care Index measuring adult-child interactions; mother's developing relationship with her baby, relationship with others in the group, and relationship with the therapists and volunteers	Unclear

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Migrant services							
Filby 202053	Vietnamese, Chinese, Albanian, Nigerian, Afghan and Yemeni	Specialist migrant maternity service	None	N/A	Positive aspects: access to midwife and referrals, provision of essentials and transport, respect and kindness of caregivers. Negative aspects: poor maternal nutrition, lack of access to hygienic infant-feeding equipment, lack of social support building and lack of service signposting.	Thematic analysis of interviews.	Unclear
Interpreter services							
Barnes 201161	White, Black, Asian , Mixed or Other	Interpreters to deliver Family-Nurse Partnership	No interpreter	No	The strength-based focus of the programme may not be conveyed adequately through an interpreter.	Mean of programme delivery indicators and thematic analysis of interviews	No

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
Rayment-Jones 202154	Asian, Black African, White Other	Interpreter services	Hospital based vs. Community based models of care.	N/A	Women described a negative experience of interpreter services during their maternity care, either through a lack of access to the service, or poor-quality interpreter services	Programme theories and rival theories relating to women's access to choice and experience of interpreter services	No
Antenatal and postnatal education							
Brookes 201559	Pakistani, Indian, Chinese, Oromo(Cultural group in Ethiopia), Somali, Bangladeshi, Caribbean(St Vincent)	Perinatal education programme, Interpreter services	None	N/A	Increased knowledge about pregnancy and parenting, improved relationships with partners and infants, positive changes in attitude towards gender roles, corporal punishments and Female Genital Mutilation	Level of knowledge about pregnancy, birth and parenting; attitudinal and behavioural changes; level of confidence; strength of family relationship	Unclear

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	Comparator	Adjustment	Intervention Outcome	Outcome Measures	Reduced inequalities
McEnery 1986 ⁵¹	Pakistani, East African Asians	A course of 12 weekly lectures, each lasting 1 1/2 hours, covering fertility, pregnancy, childbirth and childrearing by a health visitor, midwife or nutritionist to the experimental group	None	N/A	The difference in the measurements between the experimental and control group were not significant except in the immunization rate with educated mothers having a higher immunization rate.	Maternal: nutrient levels, Infants: birthweight, breastfeeding, By age 1: Height, weight, triceps, subscapular, head circumference, skin fold, vaccination uptake,	Unclear

**List of potential confounders at baseline but no adjustment for outcomes and ethnicity; NA – Not applicable due to study design; OR -odds ratio; Unclear – Evidence presented not clear and no comparison group; Potential to reduce – Intervention aims achieved but some elements of bias in study design or not an RCT*

Table 4.3 Mapping of identified interventions to existing policies using a priori conceptual framework

Author Year	Ethnic minority group	Intervention	NHS Services	Policy	Levels in framework
Models of care					
Homer 201749	Black African, Black Caribbean, Black British, Asian, Mixed, Other, Unknown	Albany Midwifery practice model (Antenatal and Postnatal visits and support including home visits)	Antenatal, Postnatal, Health visiting	Midwifery continuity of carer - Changing Childbirth	Patient, Provider, Microsystem, Organisation, Community, Policy
Hadebe 202148	White, Black, Asian, Mixed, Other	Targeted caseload midwifery	Antenatal, Postnatal	Midwifery Continuity of Carer - Better Births (Maternity transformation programme)	Patient, Provider, Microsystem, Organisation, Community, Policy
Sioti 201962	Democratic Republic of Congo, Eritrea, India, Iran, Kurdistan, Kuwait, Nigeria, Pakistan, Saudi Arabi, Sri Lanka, Sudan, Syria, Yemen.	Healthcare, Social care, Peer support.	Antenatal, postnatal	Department for Health Guidance on implementing the overseas visitor hospital charging regulations 2015.	Patient, Provider, Microsystem, Organisation, Community
Health advocacy/lay support/link worker					
Mason 199016	Asian women	Asian Mother and baby campaign	Antenatal, Postnatal	Asian Mother and Baby Campaign	Patient, Community
Parsons 199252	Born in Asia or Turkey	Multi-Ethnic Women's Health Project	Antenatal, Postnatal	Asian Mother and Baby Campaign	Patient, Community
Wiggins 200447	Black, minority ethnic, and Others	Postnatal support	Postnatal	Saving Lives: Our Healthier Nation	Provider
Smith 200457	British Pakistani	Weaning intervention delivered via the role of the link worker	Health Visiting	NHS Plan	Patient, Provider

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	NHS Services	Policy	Levels in framework
Prenatal screening					
Modell 198455	Cypriot, East African Asian (Indian), Pakistani and Italian	Fetal diagnostic screening	Antenatal, Postnatal	Unidentified	Patient
Modell 200056	Cypriot, Indian, Pakistani, Bangladeshi and Other (Italian, Other Mediterranean, Chinese, Other South-East Asian, African-Caribbean, Middle Eastern)	Genetic screening for thalassaemia during pregnancy	Antenatal	Screening programme	Patient, Provider
Dormandy 201045	North European, South or South East Asian, African/ Caribbean, South European, Other and Mixed	Women were offered antenatal SCT screening in primary care when they first reported their pregnancies in primary care gestation	Antenatal	NICE Guidelines - offering testing by 8–10 weeks in order to complete PND by 12 weeks' gestation	Patient
Liu 202250	White, Black, Asian and Mixed/Other	Fetal Medicine Foundation (FMF) first trimester screening programme for placental dysfunction	Antenatal	NICE Guideline risk factor checklist/ Saving Babies Lives (Maternity transformation programme)	Patient
Vitamin D supplementation					
Maxwell 198146	Asian women	Vitamin D supplementation	Antenatal, Postnatal	Stop Rickets	Patient

Author Year	Ethnic minority group	Intervention	NHS Services	Policy	Levels in framework
Perinatal mental health intervention					
Khan 201960	British South Asian mothers	Group psychological intervention for postnatal depression	Postnatal	NICE Guidelines - Whooley questions	Patient, Community
O'Shaughnessy 201258	Women from The Gambia, Sierra Leone, Ivory Coast and Nigeria.	A two-hour weekly group led by two psychologists featuring time for mothers to talk about daily stresses or issues at the forefront of their minds, providing containment. Volunteers visited weekly, offering practical and emotional support.		Every Parent Matters framework (Department for Education and Skills, 2007)	Patient, Provider, Community
Migrant services					
Filby 202053	Vietnamese, Chinese, Albanian, Nigerian, Afghan and Yemeni	Specialist migrant maternity service	Antenatal	Better Births Models of care (Maternity transformation programme)	Provider , Community
Interpreter services					
Barnes 201161	White, Black, Asian , Mixed or Other	Interpreters to deliver Family-Nurse Partnership	Antenatal, Postnatal	Secretary of State for Health, Reaching out: An action plan for social exclusion	Provider
Rayment-Jones 202154	Asian, Black African, White Other	Interpreter services	Antenatal, Postnatal	Better Births (Maternity transformation programme)	Provider

Mapping Existing Policy Interventions

Author Year	Ethnic minority group	Intervention	NHS Services	Policy	Levels in framework
Antenatal and postnatal education					
Brookes 201559	Pakistani, Indian, Chinese, Oromo(Cultural group in Ethiopia), Somali, Bangladeshi, Caribbean(St Vincent)	Perinatal education programme, Interpreter services	Antenatal, Postnatal	The preparation for Birth and beyond guidance (DH 2011)	Patient, Provider, Microsystem, and Community
McEnergy 198651	Pakistani, East African Asians	A course of 12 weekly lectures, each lasting 1 1/2 hours, covering fertility, pregnancy, childbirth and childrearing by a health visitor, midwife or nutritionist to the experimental group	Antenatal, postnatal, Health visits		Patient

DH – Department of Health; NHS- National Health Service; NICE – National Institute for Clinical Excellence

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