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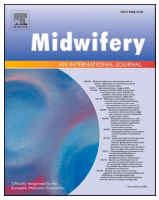

Perinatal outcomes among migrant women with no recourse to public funds or irregular status: A retrospective cohort study using the eLIXIR 'born in South London' data linkage

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ABSTRACT

Problem: Restrictive immigration policies limit maternity care access and exacerbate poverty and isolation among migrant women.
Background: In the UK, many migrant women face No Recourse to Public Funds (NRPF), restricting welfare access and making them liable for maternity care charges. Population-level evidence on perinatal outcomes remains limited.
Aim: To examine perinatal outcomes among migrant women with NRPF compared with UK-born women, migrants with recourse to public funds, and migrants with unknown visa status in an ethnically diverse urban UK population.
Methods: We conducted a retrospective analysis of linked maternity and neonatal electronic health records (eLIXIR -Born In South London) from 2018 to 2023, including 44,634 pregnancies. Multivariable regression estimated adjusted risk ratios (aRR) controlling for sociodemographic and clinical characteristics.
Findings: Migrant women with NRPF had higher risks of adverse maternal outcomes (emergency caesarean aRR 1.74, 95% CI 1.55–1.95; severe maternal morbidity 1.49, 1.33–1.67). Their infants were more likely to have low Apgar scores (1.53, 1.07–2.16) and less likely to receive skin-to-skin contact (0.92, 0.88–0.97). Infants of women with NRPF did not show higher risk of neonatal death (1.44, 0.85–2.29), whereas infants of women with unknown visa status had the highest risks of preterm birth (1.24, 1.13–1.35), low birthweight (1.28, 1.17–1.39), and neonatal death (2.27, 1.81–2.86).
Conclusion: Migrant women with NRPF and infants of women with unknown visa status face disproportionate risks of adverse outcomes. Addressing these inequities requires inclusive maternity care, accurate migration data collection, and reconsideration of NRPF and charging policies.

Statement of Significance

Issue	What is Already Known	What this Paper Adds

(*continued on next column*)

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Issue	What is Already Known	What this Paper Adds

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Issue	What is Already Known	What this Paper Adds
Migrant women with No Recourse to Public Funds (NRPF) face financial, legal, and social barriers to maternity care in the UK.	Research links NRPF and restrictive healthcare policies to delayed care, poverty, stress, and poor maternal experiences, but quantitative evidence on perinatal outcomes is sparse.	This study provides the first UK population-based evidence that women with NRPF experience markedly higher risks of severe maternal morbidity, obstetric complications, and adverse infant outcomes. Risks were greatest among women with NRPF and migrants with unknown visa status. The findings highlight the need to reconsider exclusionary policies and to evaluate targeted interventions that address inequities in perinatal health.

Introduction

Equitable access to maternity care is fundamental to improving perinatal outcomes and maternal mental health. In the United Kingdom (UK), this principle is challenged by immigration rules that restrict entitlement to public services. Many migrants are subject to a visa condition known as No Recourse to Public Funds (NRPF). NRPF is a legal restriction attached to most temporary visas, such as work, student, and spousal visas, and it also applies to people with irregular, or 'undocumented', immigration status. The NRPF status prohibits access to welfare benefits, tax credits, and social housing. Current estimates suggest that around 2.6 million people in the UK have NRPF, including approximately 1.24 million women. (Migration Observatory 2023) For pregnant women, NRPF creates profound vulnerabilities, including poverty, insecure housing, food insecurity, and poor mental health. (Jolly et al., 2022; Cuibus and Fitzpatrick-Robinson, 2023; Maternity Action 2022; Feldman, 2021)

Within the UK's National Health Service (NHS), maternity care is classified as secondary care for which most women with NRPF or irregular status are required to pay. Typical maternity care costs range from £7000 to £14,000, and unpaid debts are reported to the Home Office, potentially jeopardising future immigration applications. (Rassa et al., 2023; Health Security Agency, 2019) Exempt groups include refugees, asylum seekers (while their claim or appeal is pending), recognised victims of trafficking and modern slavery, children looked after by a local authority, and women receiving treatment under the Violence Against Women and Girls domestic violence concession. Although urgent care must not be denied, fear of high bills and immigration consequences deters many women from seeking timely maternity care, even when exempt. (Feldman, 2021; Royal College of Obstetricians and Gynaecologists 2022) Errors in charging, including bills issued to asylum seekers and trafficking survivors, further compound this deterrent effect. (Maternity Action 2021) A population-based analysis found that migrant women, particularly those with NRPF, had lower access to maternity, mental health, and social care services, and were more likely to experience inadequate antenatal care and prolonged hospital stays. (H Rayment-Jones et al., 2025) The study concluded that migrants with NRPF or unknown visa status face persistent barriers to care, underscoring the need for inclusive practice and policy reform.

Reduced engagement with maternity services is associated with pre-eclampsia, postpartum haemorrhage, preterm birth, low birthweight, and poor maternal mental health including depression, anxiety, and post-traumatic stress disorder. (Galanis et al., 2022; Dumke et al., 2024; Higginbottom et al., 2019; Howard and Khalifeh, 2020; Anderson et al., 2017) For women with NRPF, risks are heightened by domestic abuse and gender-based violence, as financial dependency and lack of housing support restrict access to safety. (Cuibus and Fitzpatrick-Robinson, 2023; Parliament, 2019) These intersecting vulnerabilities illustrate how immigration and healthcare policy act as social determinants of maternal and child health. Although these restrictions are embedded in the UK system, their relevance extends globally. High-income countries with universal health systems increasingly face tensions between commitments to universal access and restrictive immigration policies. Comparative research shows that insecure immigration status and exclusion from healthcare are linked to poor perinatal outcomes across Europe, North America, and Australia. (Heaman et al., 2013; Pedersen et al., 2014; Tankink et al., 2024; Gieles et al., 2019) The UK context therefore provides an important case study for wider debates on how immigration and healthcare policies shape maternal and infant health.

Despite growing recognition of the poor experiences and disproportionate adverse health outcomes faced by migrant women, there remains limited evidence quantifying the impact of NRPF and irregular immigration status on perinatal and maternal mental health outcomes in the UK. Previous studies have highlighted elevated risks among migrant women, but few have disentangled the specific contribution of immigration-related exclusions such as the NRPF condition or examined the effects of healthcare charging policies. For the first time, this study addresses this gap at a population level by using the eLIXIR *Born in South London* data linkage to examine perinatal outcomes among migrant women with NRPF or irregular immigration status compared with other migrant and UK-born women. The findings aim to inform equitable maternity care and immigration policy in the UK and contribute to international debates on the impact of healthcare entitlements and immigration regimes on maternal and child health.

Methods

Study setting, design, and population

We conducted a retrospective study using linked maternity and neonatal electronic health records in South London, UK. This urban area is ethnically diverse, with large migrant populations and significant socioeconomic deprivation. Maternity care is delivered across community, primary, secondary, and tertiary NHS services, with records integrated across acute and mental health providers.

Data were drawn from the Early Life Cross Linkage in Research cohort– Born in South London (eLIXIR-BiSL) cohort. (Carson et al., 2020) which links pseudonymised electronic health records from two acute NHS Trusts (Guy's and St Thomas' NHS Foundation Trust and King's College Hospital NHS Foundation Trust) and one mental health Trust (South London and Maudsley NHS Foundation Trust). Data is collected by 'opt-out' consent (with S251 approval). The dataset includes structured information on maternity, neonatal, and mental health services collected under an opt-out consent model with S251 approval. (Carson et al., 2020) While additional service utilisation data are available, this paper focuses on perinatal outcomes; access and engagement outcomes are reported in a separate publication.

The study population included all women with a recorded singleton birth between 24+0 and 43+6 weeks' gestation from October 2018 to October 2023 who had both antenatal booking and birth data. Pregnancies involving multiples (n = 1589) or missing birth data were excluded (n = 22,674). Common reasons for missing birth outcome data include early miscarriage, moving hospital, or accessing care for emergency reasons (e.g. MAU) but going on to give birth elsewhere. Women recorded as having "leave to remain" only (n = 4760) were excluded from the primary analysis due to unclear immigration status, while asylum seekers (n = 413) were excluded due to small sample size. This left 44,634 pregnancies for analysis. See supplementary file 1 (S1) for full definitions.

To ensure relevance and contextual interpretation, the NoRePF

Experts by Experience group, comprising migrant women with lived experience of NRPF and irregular immigration status contributed to shaping study objectives, prioritising outcomes, and interpreting findings. Healthcare professionals and advocacy groups also provided input, with Experts by Experience receiving training and reimbursement to support meaningful involvement.

Exposure definition

Migration status was defined using structured data on maternal country of birth, citizenship, and immigration-related administrative indicators. Women were grouped into non-migrant and migrant groups, and the migrant group further divided into three subgroups;

- **UK-born (non-migrant):** Born in the UK, irrespective of parental origin.
- **All migrants:** Born outside the UK, regardless of immigration status or duration of UK residence.

Subgroups:

1. **Migrants with recourse to public funds (RPF):** Non-UK-born women with visa conditions allowing legal entitlements to public funds and free NHS care, such as refugees, those with settled status, indefinite leave to remain, or British citizenship.
2. **Migrants with No Recourse to Public Funds (NRPF):** Women with visa conditions restricting access to welfare and NHS services (e.g. student, dependent, or spousal visas, limited leave to remain), as well as those with irregular immigration status, including visa overstayers or refused asylum seekers.
3. **Migrants with unknown visa status:** Women whose country of birth was outside the UK or whose ethnicity was not recorded as 'White British', but with missing citizenship or immigration/visa status data, for example the immigration status is recorded as 'migrant' only. This group likely comprises a mix of women with irregular or undocumented status, as well as cases of incomplete administrative data.

For sensitivity analyses, the NRPF group was restricted to women born in low- and middle-income countries (LMICs, World Bank definition). Women with "leave to remain" only, excluded from the primary analysis due to unclear status, were included as a separate category to assess the robustness of maternal and infant outcomes (see Supplementary File 2).

Covariates

Sociodemographic and clinical characteristics were recorded at the antenatal booking appointment. Variables included maternal age, parity, self-identified ethnicity, Index of Multiple Deprivation (IMD) quintile, smoking at booking, alcohol or recreational drug use, and obesity (body mass index (BMI) $\geq$30 kg/m^2). Indicators of psychosocial complexity included domestic abuse and prior social services involvement. Mental health variables included documented history of mental illness or learning disability, family or partner mental health issues, and responses to the Whooley screening questions for depression used in UK maternity care. (Smith et al., 2022) The 'high medical risk' variable was a simple count and was not weighted by severity, given heterogeneity in clinician reporting within routinely collected health records. These measures provided context for interpreting disparities in outcomes between migrant groups. All variables, including clinical, psychosocial, mental health indicators, and need for an interpreter, are described in detail in S1.

Outcome measures

Maternal and infant outcomes were selected based on gaps identified in prior literature, national maternity standards, and priorities identified through patient and public involvement. The Core Outcome Measures in Effectiveness Trials (COMET) Initiative website. (Initiative, 2025) and the Modern Slavery Core Outcome Set. (Jannesari et al., 2024) were reviewed, and a survey with twenty-two women with lived migration experience, health and social care professionals, and topic experts was conducted. This PPIE process ensured that the final maternal, infant, and child health outcomes reflected both scientific evidence and community-identified priorities.

Maternal outcomes

mode of birth (unassisted vaginal, instrumental vaginal, elective or emergency caesarean), induction of labour, epidural or spinal analgesia, third- or fourth-degree perineal trauma, estimated blood loss >500 mL, and severe maternal morbidity (defined as prolonged postpartum stay, admission to intensive care, or blood product transfusion).

Infant outcomes

stillbirth ($\geq$24 weeks), neonatal death ($\leq$28 days), preterm birth (<37 weeks), low birthweight (<2500 g), small for gestational age (<10th centile, UK-WHO charts), Apgar $\leq$7 at five minutes, admission to neonatal or special care, breastfeeding initiation, and skin-to-skin contact post-birth.

All outcomes were coded as binary variables. Full definitions are provided in Supplementary File 1.

Statistical analysis

Baseline characteristics across migration status groups were compared using χ^2 tests for categorical variables and independent *t*-tests for continuous variables. Associations between migration status and maternal and infant outcomes were estimated using log-binomial regression models with a log link to calculate risk ratios (RRs) and adjusted risk ratios (aRRs) with 95 % confidence intervals (CIs). Where log-binomial models did not converge, Poisson regression with robust standard errors was applied. Models included a random intercept for each woman to account for repeated pregnancies. Covariates included in adjusted models were selected a priori based on clinical and epidemiological relevance: maternal age, parity, smoking, BMI $\geq$30 kg/m^2, and high medical risk at booking (defined as the presence of pre-existing medical or obstetric complications such as diabetes, hypertension, cardiovascular disease, or prior adverse pregnancy outcomes).

Missing data were assessed for exposures and outcomes. Complete case analysis was used for multivariable models, which retained >95 % of the cohort. Outcomes for migrants with unknown visa status were reported separately to ensure transparency and minimise misclassification bias. Analyses were conducted using R (version 4.3.1).

Results

Table 1 presents the baseline maternal characteristics for 44,634 pregnancies. Just under half of women were UK-born non-migrants (45.5 %), while 54.5 % were migrants. Among migrants, 22.2 % had recourse to public funds, 4.3 % had NRPF or irregular status, and 20.0 % had unknown visa status. Women with NRPF were more often primiparous (63.9 %), from LMIC (84.2 %), and had greater language needs, with only 43.1 % reporting English as their primary language and 25.3 % requiring an interpreter.

UK-born women had the highest prevalence of recorded pre-existing mental health conditions (33.7 %), compared with 11.4 % among NRPF women. Despite lower recorded diagnoses, NRPF women had similar rates of positive Whooley screens (10.2 %) to UK-born women (9.8 %). In contrast, women with unknown visa status had both lower recorded

Table 1
Maternal baseline characteristics at booking by migration status, and standardised mean difference (SMD) between groups in comparison to UK born.

Maternal characteristic	UK-born (non-migrant) n(%) *n* = 20,294	All migrants (non-UK-born) n(%) *n* = 24,340	SMD	Migrants with recourse to public funds n(%) *n* = 9909	SMD	Migrants with NRPF or irregular status n(%) *n* = 1898	SMD	Migrants with unknown visa status n(%) *n* = 8919	SMD
Ethnicity			0.62		0.83		1.16		0.38
White	13,643 (67.23)	2483 (41.89)		3292 (33.22)		398 (20.97)		5278 (59.18)	
Any other	433 (2.13)	2483 (10.20)		923 (9.31)		238 (12.54)		906 (10.16)	
Black	2783 (13.71)	6107 (25.09)		3225 (32.55)		556 (29.29)		1210 (13.57)	
Mixed/multiple	1315 (6.48)	1011 (4.15)		386 (3.90)		82 (4.32)		375 (4.20)	
Asian	1270 (6.26)	3231 (13.27)		1725 (17.41)		494 (26.03)		498 (5.58)	
Not recorded	850 (4.19)	1313 (5.39)		358 (3.61)		130 (6.85)		652 (7.31)	
Age <20 years	370 (1.82)	173 (0.71)	0.10	35 (0.35)	0.14	20 (1.05)	0.065	97 (1.09)	0.06
Primiparous	10,923 (53.82)	12,390 (50.90)	0.06	4458 (44.99)	0.18	1212 (63.86)	0.205	5108 (57.27)	0.07
IMD quintile			0.29		0.28		0.41		0.28
1st (most deprived)	3178 (15.66)	4977 (20.45)		2145 (21.65)		390 (20.55)		1636 (18.34)	
2nd	7012 (34.55)	9716 (39.92)		3994 (40.31)		685 (36.09)		3581 (40.15)	
3rd	5222 (25.73)	5252 (21.58)		2053 (20.72)		413 (21.76)		2027 (22.73)	
4th	2847 (14.03)	2474 (10.16)		983 (9.92)		188 (9.91)		963 (10.80)	
5th (least deprived)	1886 (9.29)	1290 (5.30)		571 (5.76)		94 (4.95)		447 (5.01)	
Not recorded	149 (0.73)	631 (2.59)		163 (1.64)		128 (6.74)		265 (2.97)	
Country of origin income level			1.86		2.21		3.43		1.35
High income	20,294 (100.0)	8948 (36.76)		2885 (29.11)		276 (14.54)		4672 (52.38)	
Low/middle income	0 (0.0)	13,931 (57.24)		6829 (68.92)		1598 (84.19)		3025 (33.92)	
Missing	0 (0.0)	1461 (6.00)		195 (1.97)		24 (1.26)		1222 (13.70)	
English primary language	20,111 (99.10)	11,676 (47.97)	1.42	6187 (62.44)	1.05	818 (43.10)	1.57	3009 (33.74)	1.92
Interpreter required	65 (0.32)	3013 (12.38)	0.51	804 (8.11)	0.40	480 (25.29)	0.806	1171 (13.13)	0.53
High medical risk at booking	10,505 (51.76)	11,433 (46.97)	0.10	4930 (49.75)	0.04	879 (46.31)	0.109	3834 (42.99)	0.18
Pre-existing mental health conditions	6832 (33.67)	4371 (17.96)	0.37	1932 (19.50)	0.33	216 (11.38)	0.55	1583 (17.75)	0.37
Family history of mental illness	2889 (14.24)	1572 (6.46)	0.26	687 (6.93)	0.24	97 (5.11)	0.31	590 (6.62)	0.25
Whooley positive	1996 (9.84)	2237 (9.19)	0.02	889 (8.97)	0.03	193 (10.17)	0.01	762 (8.54)	0.05
BMI ≥30 kg/m²	3643 (17.95)	4398 (18.07)	0.00	1989 (20.07)	0.05	332 (17.49)	0.01	1310 (14.69)	0.0
Smoker at booking	1146 (5.65)	538 (2.21)	0.18	167 (1.69)	0.21	12 (0.63)	0.29	289 (3.24)	0.12
Domestic abuse	103 (0.51)	148 (0.61)	0.01	59 (0.60)	0.01	12 (0.63)	0.02	43 (0.48)	0.00

mental health conditions (17.8 %) and lower Whooley-positive rates (8.5 %).

Socioeconomic vulnerability clustered among migrant groups, with over half of NRPF women and those with unknown status living in the most deprived two IMD quintiles. Overall, the data illustrates substantial heterogeneity across migration groups, with NRPF women experiencing the greatest concentration of vulnerabilities at the start of pregnancy.

Table 2
Maternal outcomes (UK-born non-migrant as reference group=1).

Maternal outcome	All migrants (non-UK-born) RR / aRR (95 % CI)	Migrants with recourse to public funds RR / aRR (95 % CI)	Migrants with NRPF or irregular status RR / aRR (95 % CI)	Migrants with unknown visa status RR / aRR (95 % CI)
Mode of birth				
Emergency caesarean	1.18 (1.12–1.23)*** 1.24 (1.18–1.31)***	1.16 (1.09–1.23)*** 1.29 (1.21–1.37)***	1.72 (1.53–1.92)*** 1.74 (1.55–1.95)***	1.08 (1.02–1.15)* 1.07 (1.00–1.14)*
Elective caesarean	1.00 (0.94–1.05) 0.96 (0.91–1.02)	1.14 (1.06–1.22)*** 1.06 (0.99–1.14)	0.82 (0.71–0.96)* 0.95 (0.81–1.11)	0.86 (0.79–0.92)*** 0.83 (0.77–0.90)***
Instrumental birth	0.98 (0.93–1.04) 1.04 (0.98–1.11)	0.86 (0.80–0.93)*** 1.01 (0.93–1.10)	1.31 (1.13–1.50)*** 1.23 (1.06–1.42)**	1.08 (1.00–1.16)* 1.01 (0.93–1.09)
Pain relief				
No pharmacological pain relief	1.15 (1.08–1.23)*** 1.11 (1.04–1.18)**	1.14 (1.05–1.23)** 1.04 (0.96–1.13)	1.15 (0.98–1.33) 1.17 (0.99–1.37)	1.11 (1.02–1.21)* 1.13 (1.03–1.23)**
Perineal trauma				
3rd–4th degree tear	1.03 (1.02–1.04)*** 1.03 (1.01–1.05)*	1.04 (1.03–1.07)*** 1.04 (1.01–1.07)**	1.07 (1.04–1.10)*** 1.08 (1.02–1.14)**	1.00 (0.98–1.02) 0.99 (0.97–1.02)**
Blood loss				
>500 mls	1.10 (1.08, 1.13)*** 1.11 (1.08, 1.13)***	1.10 (1.07, 1.14)*** 1.12 (1.08, 1.15)***	1.21 (1.14, 1.28)*** 1.21 (1.14, 1.28)***	1.11 (1.03, 1.11)*** 1.06 (1.02, 1.09)***
>1L	1.14 (1.08, 1.21)*** 1.14 (1.08, 1.21)***	1.16 (1.08, 1.25)*** 1.16 (1.08, 1.24)***	1.28 (1.12, 1.45)*** 1.30 (1.14, 1.47)***	1.04 (0.97, 1.12) 1.04 (0.96, 1.12)
Severe morbidity				
Prolonged postpartum stay/ intensive care admission/ blood transfusion	1.25 (1.19, 1.32)*** 1.28 (1.22, 1.35)***	1.24 (1.16, 1.32)*** 1.28 (1.20, 1.36)***	1.47 (1.31, 1.64)*** 1.49 (1.33, 1.67)***	1.23 (1.15, 1.32)*** 1.24 (1.16, 1.33)***

aRR: Logistic regression model adjusted for maternal age, parity, smoking and high medical risk at booking.
***<0.001, **<0.01, *<0.05.

Maternal outcomes by migration status

Table 2 presents unadjusted and adjusted risk ratios for maternal outcomes across migrant groups compared with UK-born women. Women with NRPF or irregular status consistently faced the highest risks. Emergency caesarean birth was most frequent in this group (aRR 1.74, 95 % CI 1.55–1.95), with smaller increases among women with recourse to public funds (aRR 1.29, 95 % CI 1.21–1.37) and migrants with unknown visa status (aRR 1.07, 95 % CI 1.00–1.14). Elective caesarean birth was less common in women with unknown visa status (aRR 0.83, 95 % CI 0.77–0.90), with no differences for other groups. Instrumental births were more frequent among women with NRPF (aRR 1.23, 95 % CI 1.06–1.42), but no differences were seen for women with recourse (aRR 1.01, 95 % CI 0.93–1.10) or migrants with unknown visa status (aRR 1.01, 95 % CI 0.93–1.09). For intrapartum pain management, migrants overall were more likely to receive no pharmacological pain relief (aRR 1.11, 95 % CI 1.04–1.18). This was largely attributable to migrants with unknown visa status (aRR 1.13, 95 % CI 1.03–1.23), while there were no differences for women with recourse to public funds or NRPF. Rates of third- or fourth-degree perineal trauma were slightly higher among women with NRPF (aRR 1.08, 95 % CI 1.02–1.14) and those with recourse (aRR 1.04, 95 % CI 1.01–1.07), with no differences for migrants with unknown status. Postpartum haemorrhage >500 mL was more common across all migrant groups, particularly women with NRPF (aRR 1.21, 95 % CI 1.14–1.28). Severe haemorrhage >1 L was also elevated in women with NRPF (aRR 1.30, 95 % CI 1.14–1.47), with no differences for migrants with unknown visa status. Severe maternal morbidity was higher in all migrant groups, with the greatest risks among women with NRPF (aRR 1.49, 95 % CI 1.33–1.67).

Women with 'leave to remain' only were excluded from the primary analysis due to unclear immigration status. Sensitivity analyses including this group as a separate category and restricting the NRPF group to women born in low- and middle-income countries (LMICs) showed broadly similar patterns to the main findings (see S2). Compared with UK-born women, LMIC-born NRPF women had greater risks of emergency caesarean (aRR 1.85 vs 1.74), perineal trauma (aRR 1.09 vs 1.08), blood loss >500 mL (aRR 1.23 vs 1.21) and >1 L (aRR 1.34 vs 1.30), and severe maternal morbidity (aRR 1.59 vs 1.49). Instrumental birth (aRR 1.23 vs 1.23) and no pharmacological pain relief (aRR 1.19 vs 1.17) were also slightly higher, while no differences were observed for elective caesarean in either group.

Infant outcomes by migration status

Table 3 presents crude and aRRs for infant outcomes, using infants of UK-born women as the reference group.

Neonatal death showed no difference for infants of women with NRPF or irregular status (aRR 1.44, 95 % CI 0.85–2.29), but risk was higher among infants of women with unknown visa status (aRR 2.27, 95 % CI 1.81–2.86), contributing to the overall increase among migrant infants (aRR 1.63, 95 % CI 1.33–1.99). For preterm birth, there was no difference for infants of women with NRPF (aRR 0.90, 95 % CI 0.74–1.09) or recourse to public funds (aRR 0.92, 95 % CI 0.83–1.01), whereas infants of women with unknown visa status had higher risk (aRR 1.24, 95 % CI 1.13–1.35). Low birthweight was more common overall (aRR 1.13, 95 % CI 1.06–1.22), driven by increased risk in infants of women with unknown status (aRR 1.28, 95 % CI 1.17–1.39). There was no difference for infants of women with NRPF (aRR 1.03, 95 % CI 0.85–1.23) or recourse groups (aRR 1.08, 95 % CI 0.99–1.19). Low Apgar scores (≤7 at 5 min) were more frequent among infants of women with NRPF (aRR 1.53, 95 % CI 1.07–2.16), recourse to public funds (aRR 1.23, 95 % CI 1.01–1.51), and unknown status (aRR 1.47, 95 % CI 1.21–1.79), contributing to an overall increase among migrants (aRR 1.35, 95 % CI 1.16–1.59). Breastfeeding initiation showed no difference between groups. By contrast, skin-to-skin contact immediately after birth was less common among infants of women with NRPF (aRR 0.92, 95 % CI 0.88–0.97) and slightly reduced among those with recourse to public funds (aRR 0.97, 95 % CI 0.95–1.00).

Table 3
Infant Outcomes (UK-born non-migrant mothers as reference group=1).

Infant outcome	All migrants (non-UK born) RR/aRR (95 % CI)	Migrants with RPF RR/aRR (95 % CI)	Migrants with NRPF RR/aRR (95 % CI)	Migrants with unknown visa status RR/aRR (95 % CI)
Neonatal death	1.56 (1.28–1.91) ***	1.09 (0.83–1.43)	1.28 (0.76–2.03)	2.28 (1.82–2.85) ***
	1.63 (1.33–1.99) ***	1.15 (0.87–1.51)	1.44 (0.85–2.29)	2.27 (1.81–2.86) ***
Preterm birth (<37 weeks)	1.00 (0.93–1.07)	0.90 (0.82–0.98)*	0.83 (0.68–1.00)	1.21 (1.10–1.32) ***
	1.03 (0.96–1.11)	0.92 (0.83–1.01)	0.90 (0.74–1.09)	1.24 (1.13–1.35) ***
Low birth weight (<2500 g)	1.08 (1.01–1.16)*	1.02 (0.93–1.11)	0.94 (0.78–1.12)	1.24 (1.14–1.35) ***
	1.13 (1.06–1.22) ***	1.08 (0.99–1.19)	1.03 (0.85–1.23)	1.28 (1.17–1.39) ***
Apgar score ≤7	1.33 (1.15–1.55) ***	1.21 (0.99–1.47)	1.47 (1.03–2.04)*	1.47 (1.21–1.77) ***
	1.35 (1.16–1.59) ***	1.23 (1.01–1.51)*	1.53 (1.07–2.16)*	1.47 (1.21–1.79) ***
Breastfeeding initiation	1.00 (0.98–1.02)	1.00 (0.97–1.02)	0.99 (0.94–1.04)	1.00 (0.97–1.02)
	1.00 (0.98–1.02)	1.00 (0.97–1.03)	0.99 (0.94–1.05)	1.00 (0.97–1.05)
Skin-to-skin contact	0.97 (0.95–0.99) **	0.98 (0.95–1.00)	0.93 (0.88–0.98) **	0.97 (0.95–1.00)
	0.97 (0.95–0.99) **	0.97 (0.95–1.00)*	0.92 (0.88–0.97) **	0.97 (0.94–1.00)*

aRR: Logistic regression model adjusted for maternal age, parity, smoking.
***<0.001, **<0.01, *<0.05.

A sensitivity analysis including infants of women with "leave to remain" only and restricting NRPF to LMIC-born mothers (see S2) showed broadly similar results. Risks of low Apgar scores were slightly higher in the LMIC subgroup (aRR 1.76 vs 1.53), while reduced skin-to-skin contact was comparable (aRR 0.91 vs 0.92). No differences were observed for neonatal death, preterm birth, low birthweight, neonatal unit admission, or breastfeeding initiation.

Discussion

This study examined maternal and infant outcomes by migration status in an urban, ethnically diverse UK cohort using linked maternity and neonatal records. Migrant women faced higher risks of some adverse outcomes compared with UK-born women, but risks varied across groups. Women with NRPF or irregular status had greater risk of emergency caesarean, severe postpartum haemorrhage, and severe maternal morbidity, and their infants were more likely to have low Apgar scores. Women with 'leave to remain' only were excluded due to unclear status; sensitivity analyses including them did not alter results, supporting the robustness of findings. Sensitivity analyses for NRPF women born in LMICs showed similar or slightly higher risks. Women with unknown visa status had the highest risk of preterm birth, low birthweight, and neonatal death, while outcomes for migrants with recourse to public funds were broadly comparable with UK-born women. These findings indicate that immigration status and entitlement to healthcare and welfare are central drivers of perinatal

inequities.

Infants of migrant women with unknown visa status experienced the highest risks of adverse outcomes. While we cannot fully ascertain whether these women are undocumented or whether the data are missing due to administrative issues, the findings highlight that barriers to disclosing or documenting immigration status, potentially including fear of immigration consequences, financial costs, and discrimination, may be important drivers of poor neonatal outcomes in this group. Policy interventions targeting NRPF alone may not fully address these risks, underscoring the need for inclusive care strategies that protect all women with uncertain or irregular immigration status.

Baseline characteristics in this study highlighted substantial heterogeneity across groups. Compared to UK-born and other migrant women, those with NRPF or irregular status were more often primiparous, from low- and middle-income countries, and had greater language needs, with one-quarter requiring an interpreter. Socioeconomic deprivation was concentrated among NRPF and unknown visa status groups, with over half living in the most deprived IMD quintiles. UK-born women had the highest prevalence of recorded pre-existing mental health conditions, but positive Whooley screen rates were higher among NRPF women and lower among women with unknown visa status. This discrepancy suggests possible under-recognition or under-recording of mental health concerns among migrant women, which may reflect cultural differences in how mental health is discussed as well as midwives being less likely to ask about it in these groups. Such patterns are consistent with barriers to disclosure and access reported in previous research, including stigma, language difficulties, and structural obstacles to care. (Nyikavaranda et al., 2023) and highlight the need for further investigation.

Perinatal outcome results align with international evidence that precarious immigration status and lack of access to universal healthcare and welfare support are associated with poorer maternal and infant outcomes in high-income settings. (de Weck et al., 2025; Heslehurst et al., 2018; Nilsen et al., 2018; Eslier et al., 2023) A global systematic review of refugees and asylum seekers reported poorer perinatal outcomes, including higher risks of maternal mortality, preterm birth, congenital anomalies, and poor mental health. Access to care was obstructed by structural, social, and cultural barriers, and women frequently described discrimination, poor communication, and stereotyping within maternity services. (Heslehurst et al., 2018) Within the UK, maternity mortality reviews have also identified inadequate interpretation services, poor communication, and late engagement with care as persistent contributors to adverse outcomes. (MBRRACE-UK 2024) Our findings add to this literature by disaggregating migrant groups and showing that poorer maternal outcomes were concentrated among women with NRPF, while infant outcomes were poorest among women with unknown visa status. The mechanisms behind these differences remain unclear and should be investigated through qualitative research with diverse groups of migrant women and those providing their care, to understand how structural and clinical factors interact to influence perinatal outcomes.

Language and communication difficulties are a key explanatory factor in perinatal inequities. Interpreter need was strongly associated with migration status, and wider evidence shows that reliance on family members or ad hoc translation remains common. (MBRRACE-UK 2024; Bridle et al., 2021) These practices can undermine informed consent, shared decision-making, and timely escalation of care, contributing to poorer outcomes. (Hamwi et al., 2021; Hamwi et al., 2023; Rayment-Jones et al., 2021; Race and Observatory, 2022; NHS Race and Health Observatory 2023; MacLellan et al., 2024) Establishing national standards for professional interpretation, with monitoring of provision and quality, would help improve equitable communication in maternity settings. (MBRRACE-UK 2024; Bridle et al., 2021; Rayment-Jones et al., 2021; NHS Race and Health Observatory 2023) Evidence from Canada highlights that this is not specific to the UK context: in a large study of recently arrived migrant women in Montreal, nearly 85 % of those requiring an interpreter reported not being offered one, and low language ability was strongly linked to inadequate support from healthcare providers and poorer responsiveness to women's preferences. (Baltzan et al., 2025)

Policy reforms are necessary to reduce structural barriers. Review of NRPF restrictions and NHS charging arrangements is warranted, as these policies deter timely access and create financial and psychological stress during pregnancy. (Feldman, 2021; Maternity Action 2021) International evidence suggests that migrant health is shaped by host countries' broader 'migration regimes', with more inclusive policies associated with better outcomes, satisfaction, and engagement. (Galanis et al., 2022; Gieles et al., 2019; Villalonga-Olives et al., 2017; Eick et al., 2024) Removing the NRPF condition for pregnant women and new mothers not only has the potential to reduce inequities in maternity access and outcomes, with economic modelling showing long term cost savings, but also aligns with the critical importance of the first 1001 days from conception through to age two, a period when early intervention can yield profound benefits for lifelong health and wellbeing. Crucially, ensuring that all women can access essential maternity care without fear of discrimination, debt or immigration consequences is consistent with the principles of universal healthcare and with international human rights obligations, including the UN Sustainable Development Goal of universal health coverage. (World Health Organization 2025) and the Convention on the Elimination of All Forms of Discrimination Against Women. (Office of the High Commissioner for Human Rights 1979) However, the impact of any policy change should be carefully evaluated to assess its effectiveness and sustainability.

In clinical practice, continuity of midwifery care for socially complex groups could build trust, promote earlier engagement, and improve detection and management of complications. (Rayment-Jones et al., 2022; Sandall et al., 2024; Stevenson et al., 2024) Trauma-informed and culturally safe approaches, alongside systematic provision of professional interpreters, are also essential to reducing risks and improving women's experiences. (Jones et al., 2017; Shorey et al., 2021; Al-Mubarak et al., 2025) Strengthening postnatal follow-up and ensuring effective discharge planning are also important, particularly for women with insecure immigration status. For migrant women, continuity must extend beyond relationships with individual professionals to joined-up care across providers and sectors, ensuring coherent pathways in the first 1001 days and beyond. (Rayment-Jones et al., 2022; Frederiksen et al., 2023; Rayment-Jones et al., 2019) Equally vital is the safe and accurate collection of data on ethnicity, migration, and social risk factors. Such data are crucial for identifying inequities and providing care that meets women's individual needs but must be gathered in ways that do not increase fear or risk, particularly those in precarious situations. Evidence suggests that ethnicity is frequently recorded inaccurately in maternity records, with increasing difficulty in classification due to growing population diversity, mixed ethnic identities, the fluidity of self-identified ethnicity over time, and inconsistent coding systems. This highlights the need for investment in robust, standardised approaches that prioritise both data quality and women's safety and trust in the health system. (H Rayment-Jones et al., 2025; Valles et al., 2015)

Strengths of this study include its large sample size and use of contemporary linked maternity and neonatal data that allows disaggregation of migrant groups often invisible in standard registries. Robust Patient and Public Involvement (PPI) through the "NoRePF Experts by Experience group" ensured that research questions were grounded in lived experience. However, there are limitations. Migration and education data were incomplete, with over 60 % of education fields missing, particularly for migrant women. Interpreter need was recorded but not the adequacy of provision, and quality likely varied considerably. Social and medical risks at booking relied on clinician coding and disclosure, potentially underestimating risk among women with limited prior healthcare contact. Antenatal diagnoses such as gestational diabetes and fetal growth restriction were inconsistently recorded, restricting analysis of underdiagnosis. We could not distinguish between spontaneous

and medically indicated preterm births, and residual confounding is possible despite adjustment. A substantial proportion of migrant women had unknown visa status. Their entitlement to free NHS care was unclear, and it is possible that some had recourse to public funds while others did not, which may have contributed to misclassification and affected observed perinatal outcomes. The dataset also spans the COVID-19 pandemic, which may have influenced missing records, care access and outcomes. Finally, multiple comparisons increase the risk of type I error, so findings close to the null should be interpreted cautiously, with emphasis on effect sizes and consistency with existing literature.

In conclusion, migrant women in the UK are not a homogeneous group and perinatal outcomes for migrant women differ. While outcomes for those who can access public funds were broadly similar to UK-born women, migrant women with NRPF or irregular status experience markedly higher risks of adverse maternal outcomes, including emergency caesarean birth, severe postpartum haemorrhage, and severe maternal morbidity. By contrast, adverse infant outcomes, including preterm birth, low birthweight, and neonatal death, are primarily observed among infants of migrant women with unknown visa status. These findings align with international evidence that restrictive immigration and healthcare policies contribute to inequities, while highlighting variation by outcome and subgroup. Addressing these disparities requires coordinated action: research to evaluate targeted interventions; policy reform to remove financial and administrative barriers; and clinical practice that ensures continuity, professional interpretation, and trauma-informed care. Ensuring all women, regardless of immigration status, feel safe and supported to access maternity services is essential for perinatal health equity.

Ethical approval

The Early Life Cross Linkage in Research, Born in South London (eLIXIR-BiSL) Partnership has received ethical approval from the Oxfordshire Research Ethics Committee C (23/SC/0116) as an anonymised dataset for medical research.

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Availability of data and materials

The data accessed by eLIXIR-BiSL remain within an NHS firewall and governance is provided by the eLIXIR Oversight Committee reporting to relevant information governance clinical leads. Subject to these conditions, data access is encouraged and those interested should contact the eLIXIR Chief Investigator (Professor Lucilla Poston; lucilla.poston@kcl.ac.uk) or via the study web site https://www.kcl.ac.uk/research/elixir-1

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CRediT authorship contribution statement

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Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Supplementary materials

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References

Al-Mubarak, A., El Hajj, M., Farah, R., Abdulrahim, S., 2025. The impact of culture on access to and utilisation of maternity care amongst Muslim women in high-income countries: a qualitative systematic review. BJOG. 132 (7), 876–888.

Anderson, F.M., Hatch, S.L., Comacchio, C., Howard, L.M., 2017. Prevalence and risk of mental disorders in the perinatal period among migrant women: a systematic review and meta-analysis. Arch. Womens Ment. Health 20 (3), 449–462.

Baltzan, I., Tremblay, R., Charest-Morin, R., Raymond-Dufresne, E., Labelle, R., Boucher, E., et al., 2025. Migrant-friendly maternity care in Montreal, Canada: a cross-sectional study on migrant women's care perspectives. PLoS. One 20 (2), e0323451.

Bridle, L., Bassett, S., Silverio, S.A., 2021. We couldn't talk to her": a qualitative exploration of the experiences of UK midwives when navigating women's care without language. Int. J. Hum. Rights Heal. 14 (4), 359–373.

Carson, L.E., Hardelid, P., Sutcliffe, A.G., Chiu, Y., Lyall, H., Moncrieff, G., et al., 2020. Cohort profile: the eLIXIR partnership—a maternity–child data linkage for life course research in South London, UK. BMJ Open. 10 (6), e039583.

Cuibus, M., Fitzpatrick-Robinson, M., 2023. Deprivation and the no recourse to public funds (NRPF) condition [Internet]. Oxf. Migr. Obs. [cited 2025 Sep 11]. Available from https://migrationobservatory.ox.ac.uk/wp-content/uploads/2023/11/MigObs-Briefing-Deprivation-and-the-no-recourse-to-public-funds-NRPF-condition.pdf.

de Weck, E., Jaeger, F.N., Paris, D.H., Goosen, S., Tschudin Sutter, S., Grob, P., et al., 2025. Influence of Women's Legal Status On Pregnancy Outcomes and Quality of care: Findings from the Pregnancy of Migrants in Switzerland (PROMISES) Program, 5. PLOS Glob Public Health e0004217.

Dumke, L., Wilker, S., Hecker, T., Neuner, F., 2024. Barriers to accessing mental health care for refugees and asylum seekers in high-income countries: a scoping review of reviews mapping demand and supply-side factors onto a conceptual framework. Clin. Psychol. Rev. 113, 102491.

Eick, F., Schuler, M.S., Tapia, G., Aasheim, E.T., Magnus, M.C., Grøholt, E.K., et al., 2024. Perinatal mortality among pregnant undocumented migrants in Norway, 1999–2020: a register-based population study. Soc. Sci. Med. 353, 117055.

Eslier, M., Rossi, G., Williams, D.R., Lindquist, A., Brolan, C.E., Bohren, M.A., 2023. Association between migration and severe maternal outcomes in high-income countries: systematic review and meta-analysis. PLoS. Med. 20 (6), e1004257.

Feldman, R., 2021. NHS charging for maternity care in England: its impact on migrant women. Crit. Soc. Policy. 41 (3), 447–467.

Frederiksen, M.S., Schmied, V., Overgaard, C., 2023. Creating coherent perinatal care journeys: an ethnographic study of the role of continuity of care for Danish parents in a vulnerable position. Women. Birth 36 (2), 117–126.

Galanis P., Spyros K., Siskou O., Konstantakopoulou O., Angelopoulos G., Kaitelidou D. Healthcare services access, use, and barriers among migrants in Europe: a systematic review. medRxiv [Preprint]. 2022 [cited 2025 Sep 11]. doi:10.1101/2022.02.24.22271449.

Gieles, N.C., Tankink, J.B., van Midde, M., Goosen, S., Knipscheer, J.W., Schoevers, R.A., 2019. Maternal and perinatal outcomes of asylum seekers and undocumented migrants in Europe: a systematic review. Eur. J. Public Health 29 (4), 714–723.

Hamwi, S., Lorthe, E., Barros, H., 2021. Language proficiency and migrant–native disparities in postpartum depressive symptoms. Int. J. Environ. Res. Public Health 18 (9), 4782.

Hamwi, S., Barros, H., Lorthe, E., 2023. Migrant-native disparities in obstetric neuraxial analgesia use: the role of host-country language proficiency. Anesth. Analg. 137 (5), 870–881.

Health Security Agency, U.K., 2019. Information Sharing With the Home Office For Unpaid NHS Patient debts: Privacy Notice [Internet]. UKHSA, London [cited 2025 Sep 11]. Available from. https://www.gov.uk/government/publications/information-sharing-with-the-home-office-for-unpaid-nhs-patient-debts-privacy-notice.

Heaman, M., Bayrampour, H., Kingston, D., Blondel, B., Gissler, M., Roth, C., et al., 2013. Migrant women's utilization of prenatal care: a systematic review. Matern. Child Health J. 17 (5), 816–836.

Heslehurst, N., Brown, H., Pemu, A., Coleman, H., Rankin, J., 2018. Perinatal health outcomes and care among asylum seekers and refugees: a systematic review of systematic reviews. BMC. Med. 16, 89.

Higginbottom, G.M.A., Morgan, M., Alexandre, M., Chiu, Y., Forgeron, J., Kocay, D., et al., 2019. Experience of and access to maternity care in the UK by immigrant women: a narrative synthesis systematic review. BMJ Open. 9 (12), e029478.

Howard, L.M., Khalifeh, H., 2020. Perinatal mental health: a review of progress and challenges. World Psychiatry 19 (3), 313–327.

C.O.M.E.T. Initiative. COMET initiative [Internet]. 2025 [cited 2025 Sep 11]. Available from: https://www.comet-initiative.org/.

Jannesari, S., Johnson, E., Di Guardo, R., Zimmerman, C., Kiss, L., Oram, S., et al., 2024. The Modern Slavery Core Outcome Set: a survivor-driven consensus on priority outcomes for recovery, wellbeing, and reintegration. Trauma Violence Abuse 25 (9), 2377–2389.

Jolly, A., Singh, J., Lobo, S., 2022. No recourse to public funds: a qualitative evidence synthesis. Int. J. Migr. Health Soc. Care 18 (2), 107–123.

Jones, E., Lattof, S.R., Coast, E., 2017. Interventions to provide culturally appropriate maternity care services: factors affecting implementation. BMC. Pregnancy. ChildBirth 17, 267.

MacLellan, J., McNiven, A., Kenyon, S., 2024. Provision of interpreting support for cross-cultural communication in UK maternity services: a Freedom of Information request. Int. J. Nurs. Stud. Adv. 6, 100162.

Maternity Action, 2021. Breach of trust: a Review of Implementation of the NHS Charging Programme in Maternity Services in England [Internet]. Maternity Action, London [cited 2025 Sep 11]. Available from. https://www.maternityaction.org.uk.

Maternity Action, 2022. Undocumented Migrants: Maternity Rights and Benefits [Internet]. Maternity Action, London [cited 2025 Sep 11]. Available from. https://www.maternityaction.org.uk.

MBRRACE-UK, 2024. Perinatal Confidential enquiry: the Care of Recent Migrant Women With Language Barriers Who Have Experienced a Stillbirth Or Neonatal death: State of the Nation Report [Internet]. Birmingham: University of Birmingham [cited 2025 Sep 11]. Available from. https://research.birmingham.ac.uk/en/publications/mbrrace-uk-perinatal-confidential-enquiry-the-care-of-recent-migr.

Migration Observatory, 2023. Number of UK Residents Without Welfare Safety Net Increases By 1 Million in Two Years [Internet]. University of Oxford, Oxford [cited 2025 Sep 11]. Available from. https://migrationobservatory.ox.ac.uk/press/number-of-uk-residents-without-welfare-safety-net-increases-by-more-than-1-million-in-two-years/.

NHS Race and Health Observatory, 2023. Promoting Effective and Respectful Communication With Ethnic Minority Women and Pregnant People [Internet]. RHO, London [cited 2025 Sep 11]. Available from. https://nhsrho.org/research/promoting-effective-and-respectful-communication-with-ethnic-minority-women-and-pregnant-people/.

Nilsen, R.M., Vik, E.S., Rasmussen, S., DeRoo, L.A., Irgens, L.M., Håberg, S.E., 2018. Preeclampsia by maternal reasons for immigration: a population-based study. BMC. Pregnancy. ChildBirth 18, 423.

Nyikavaranda, P., Madziva, R., Chase, E., Phillimore, J., 2023. Barriers and facilitators to seeking and accessing mental health support in primary care and the community among female migrants in Europe: a feminisms systematic review. Int. J. Equity. Health 22 (1), 70.

Office of the High Commissioner for Human Rights, 1979. Convention On the Elimination of All Forms of Discrimination Against Women. United Nations, New York. Dec 18 [cited 2025 Sep 11]. Available from. https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-elimination-all-forms-discrimination-against-women.

Parliament, U.K., 2019. Legislative scrutiny: draft Domestic Abuse Bill [Internet]. Lond: UK Parliam [cited 2025 Sep 11]. Available from. https://committees.parliament.uk/writtenevidence/99544/html/.

Pedersen, G.S., Grøntved, A., Mortensen, L.H., Andersen, A.M.N., Rich-Edwards, J., 2014. Maternal mortality among migrants in Western Europe: a meta-analysis. Matern. Child Health J. 18 (7), 1628–1638.

Race, N.H.S., Observatory, Health, 2022. Ethnic Inequalities in healthcare: a Rapid Evidence Review [Internet]. RHO, London [cited 2025 Sep 11]. Available from. https://nhsrho.org/research/ethnic-inequalities-in-healthcare-a-rapid-evidence-review-3/.

Rassa, N., Rhead, R., Zolfaghari, Y., Ekezie, W., Saifee, J., Hargreaves, S., et al., 2023. The impact of NHS charging regulations on healthcare access and utilisation among migrants in England: a systematic review. BMC. Public Health 23, 1146.

Rayment-Jones, H., Harris, J., Harden, A., Khan, Z., Sandall, J., 2019. How do women with social risk factors experience United Kingdom maternity care? A realist synthesis. Birth 46 (3), 461–474.

Rayment-Jones, H., Vousden, N., Mukherjee, V., Hollowell, J., Hardelid, P., Sandall, J., 2021. Project20: interpreter services for pregnant women with social risk factors in England: what works, for whom, in what circumstances, and how? Int. J. Equity. Health 20, 260.

Rayment-Jones, H., Harris, J., Harden, A., Turienzo, C.F., Sandall, J., 2022. Project20: maternity care mechanisms that improve (or exacerbate) health inequalities. A realist evaluation. Women. Birth 36 (3), e314–e327.

Rayment-Jones, H., Harris, J., Harden, A., Vousden, N., Khalil, A., Sandall, J., 2025a. Access and engagement with maternity, social care and mental health services for perinatal migrant women with no recourse to public funds and irregular status: a cross-sectional study using the eLIXIR born in South London. UK Matern.-Child Data Link SSRN. https://doi.org/10.2139/ssrn.5398611 [cited 2025 Sep 11].

Rayment-Jones, H., Lovell, H., Vowles, Z., 2025b. The reliability of maternal and infant ethnicity data in maternity health records. Skeena Int. J. Pregnancy Women Health 2 (1). https://doi.org/10.51626/sijpwh.2025.02.00004 e00004.

Royal College of Obstetricians and Gynaecologists, 2022. Equitable Access to Maternity Care For refugee, Asylum Seeking and Undocumented Migrant Women [Internet]. RCOG, London [cited 2025 Sep 11]. Available from. https://www.rcog.org.uk/about-us/campaigning-and-opinions/position-statements/position-statement-equitable-access-to-maternity-care-for-refugee-asylum-seeking-and-undocumented-migrant-women/.

Sandall, J., Soltani, H., Gates, S., Shennan, A., Devane, D., 2024. Midwife continuity of care models versus other models of care for childbearing women. Cochrane Database Syst. Rev. 3. CD004667.

Shorey, S., Ng, E.D., Downe, S., 2021. Cultural competence and experiences of maternity health care providers on care for migrant women: a qualitative meta-synthesis. Birth 48 (4), 458–469.

Smith, R.D., Shakespeare, J., Dixon, A., McBride, E., Kaylor-Hughes, C., Smithson, J., et al., 2022. Meta-analysis of diagnostic properties of the Whooley questions to identify depression in perinatal women. J. Affect. Disord. 315, 148–155.

Stevenson, K., Opondo, C., Rayment-Jones, H., Whitehouse, K., Jardine, J., Rowe, R., et al., 2024. Public health, policy, and clinical interventions to improve perinatal care for migrant women and infants in high-income countries: a systematic review. EClinicalMedicine 78, 102938.

Tankink, J.B., Korfker, D.G., Wagemaker, N.M., Goosen, S., Schoevers, R.A., 2024. Pregnancy outcomes of forced migrants in the Netherlands: a national registry-based study. J. Migr. Health 10, 100261.

Valles, S.A., Bhopal, R.S., Aspinall, P.J., 2015. Census categories for mixed race and mixed ethnicity: impacts on data collection and analysis in the US, UK and NZ. Public Health 129 (3), 266–270.

Villalonga-Olives, E., Kawachi, I., von Steinbüchel, N., 2017. Pregnancy and birth outcomes among immigrant women in the US and Europe: a systematic review. J. Immigr. Minor. Health 19 (6), 1469–1479.

World Health Organization, 2025. SDG Target 3.8: Achieve Universal Health coverage, Including Financial Risk protection, Access to Quality Essential Health-Care Services and Access to safe, effective, Quality and Affordable Essential Medicines and Vaccines For All [Internet]. WHO, Geneva [cited 2025 Sep 11]. Available from. https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/sdg-target-3.8-achieve-universal-health-coverage-(uhc)-including-financial-risk-protection.