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Original Research

Migration, ethnicity and mental health: evidence from mothers participating in the Millennium Cohort Study

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ABSTRACT

Objectives: Over a quarter of UK births are to women who were born outside of the UK. Black and Minority Ethnic (BME) women are disproportionately affected by poor mental health and inequitable access to mental health care in the perinatal period, yet the influence of the migrant status (mothers' UK vs. non-UK birth) is poorly understood. This study aimed to explore the relationship between ethnicity, migration and mental health indicators among mothers participating in a large nationally representative cohort study.

Study design: This is a secondary analysis of data from the Millennium Cohort Study.

Methods: Logistic regression quantified the crude and adjusted effects of self-reported ethnicity and migrant status on prevalence of psychological distress and treatment for anxiety/depression at 9-month and 5-year postpartum.

Results: We found substantial variation in the prevalence of distress according to ethnicity and migrant status, with Indian and Pakistani women at greatest risk. Despite equal or greater risk, BME and migrant women were less likely to report treatment for anxiety/depression. Mutually adjusted analyses showed ethnicity to be a stronger predictor of both outcomes than migrant status; however, at 5 years, being a migrant independently predicted lower odds of treatment, for a statistically similar level of distress.

Conclusions: Migrant women are likely to be at high risk of poor mental health in the perinatal period and beyond, yet may face significant barriers to accessing mental health care. A better understanding of ethnicity and migration as interrelated risk factors for perinatal mental ill-health is needed to help National Health Service organisations develop policy and practice that is flexible and responsive to diversity.

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Introduction

Migration (for the purposes of this paper, living outside one's country of birth) is increasingly recognised as a social determinant of physical and mental health.[1–3] The scale and pace of migration to the UK calls for a better understanding of the health needs of migrants, yet study of this population is limited by data availability, difficulty reaching underserved populations, political sensibility and the close correlation between migrant and ethnic minority status.[2] Internationally, evidence of the impact of migration on mental health is mixed and sometimes contradictory.[2] Conflict, gender-based violence, persecution, political instability and traumatic migration experiences place a minority of migrants, who tend to be the focus of most UK studies,[4,5] at particularly high risk.[4,5] Conversely, a 'healthy migrant effect' (self-selection of individuals who are resilient to the stresses of migration) has also been associated with relatively good mental health.[2] Regardless of prior experience, postmigration stressors such as social isolation, lack of familiarity with health systems, poor host language proficiency and precarious legal status can negatively impact mental health.[6]

A rapidly increasing proportion of UK births are to migrant women (from 11.6% in 1990 to 28.2% in 2016[7]). Common mental disorder (CMD), encompassing different types of depression and anxiety,[8] is highly prevalent in the perinatal period (pregnancy and the year after birth)[9] and is associated with short- and long-term adverse effects on both mothers and child development, particularly if untreated or persistent.[9–11] Postnatal cases often continue from prepregnancy/pregnancy, and around one-third of affected women have symptoms beyond a year after delivery.[12] Perinatal CMD disproportionately affects Black and Minority Ethnic (BME) women,[13–15] who may also experience chronic and persistent symptoms because of lower rates of identification and treatment.[16–18] While social factors are thought to be central to this inequality,[19–21] the influence of migration is poorly understood. Despite considerable heterogeneity, most studies of perinatal CMD among migrants suggests a higher risk compared with non-migrants, particularly among women from low- and middle-income countries.[22–24] However, few UK studies have attempted to disentangle the effects of migration and ethnicity or have investigated the effect of mothers' non-UK birth on use of and access to mental health care.[25,26]

This study used existing data to explore the relationship between ethnicity, migration and indicators of mental health, in a nationally representative sample of mothers participating in a longitudinal cohort study. In the absence of diagnostic interviews for CMD, we estimated the relative risk of psychological distress (a state of emotional suffering characterized by symptoms of depression and anxiety)[27] and the relative risk of self-reported treatment for anxiety/depression between maternal ethnic groups and by migrant status (mothers' UK vs. non-UK birth), during the first postnatal year and five years after the birth of their child.

Methods

Study design and setting

The Millennium Cohort Study (MCS) is a nationally representative longitudinal study of 18,818 infants born in the UK between September 2000 and January 2002. A random two-stage sample was drawn from child benefit registers, with stratified sampling at the electoral ward level and oversampling of ethnic minority and disadvantaged areas, to ensure adequate representation of these populations. Infants were included if alive and living in the UK at 9 months of age.[28] Although UK child benefit coverage is near complete and is not limited to British citizens, ineligibility due to recent or temporary immigrant status would exclude some vulnerable migrant groups who face significant barriers to health care.[29] Parents were interviewed when children were aged 9 months, 3 years, 5 years and subsequently every 2–4 years, covering a range of socio-economic and health factors.[30] We analysed the prevalence of non-specific psychological distress and treatment for anxiety/depression among participating mothers, according to ethnicity and migrant status (UK vs. non-UK birth). These outcomes were examined when participating children were aged 9 months and 5 years—two time points representing significant life periods for parents, namely, the first postnatal year and the end of the preschool period.

Study period and participants

We included all women participating in the MCS at 9 months, who were birth mothers of singletons residing in England and whose ethnicity and country of birth were recorded. Women residing in UK countries other than England were excluded because of relatively low ethnic minority density and differing policy contexts in these settings. The 5-year sample 'pool' was a subset of 9 months, excluding those who did not respond or were no longer eligible (died or emigrated). Final sample sizes varied by outcome because of data availability (Fig. 1).

Measures

Data on mother's country of birth and ethnicity were drawn from the 'main respondent' interview, which included a self-completion module and was conducted with the aid of an interpreter if necessary (8% of interviews at 9 months). Translated materials were limited to information and advice sheets and consent forms. Ethnicity was self-reported in the first survey with reference to 2001 census categories.[30] Owing to small numbers of migrants across some ethnic minority groups, the following categories were used: white British, Indian, Pakistani, Bangladeshi and black African. 'Black Caribbean' and 'white Irish' categories were omitted because of small numbers, particularly of migrant women. 'Mixed' and 'other' categories were omitted because of a level of ethnic and geographic diversity that would limit meaningful analysis. Country of birth was available from linked birth

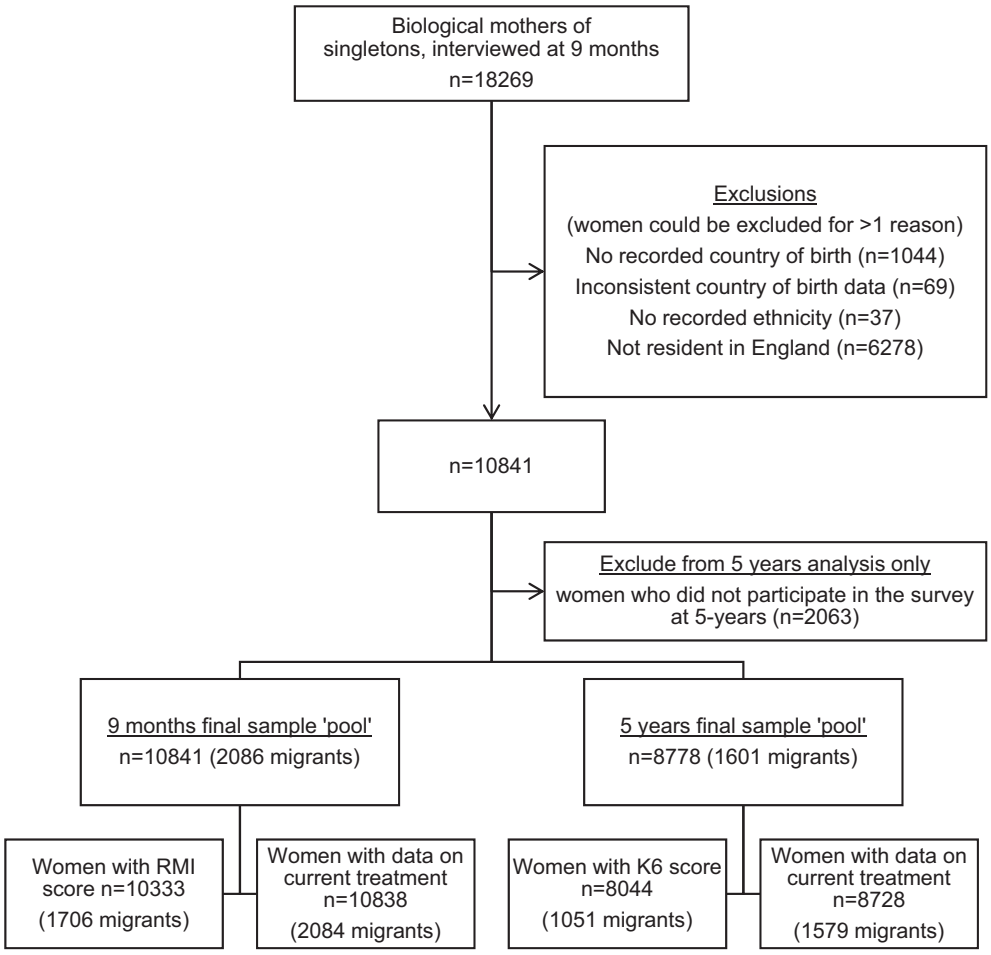

Fig. 1 – Exclusions and final sample sizes. RMI, Rutter Malaise Inventory.

registration records and/or self-reported at 3 years, determining migrant status for 94.3% of our initial sample.

At 9 months, psychological distress was defined as a score of ≥4 (of a maximum of 9) on a modified version of the Rutter Malaise Inventory (RMI), designed to identify individuals at risk of depression.[31] This contained nine yes/no questions selected from the full 24-item inventory and was tested using Cronbach's alpha coefficient to ensure reliability of at least 0.7.[32] At 5 years, psychological distress was defined as a score of ≥13 (of a maximum of 24) on the six-item Kessler scale (K6), originally developed to identify cases of serious mental illness.[33] Both inventories were administered by self-completion.[32] Although both have performed well in large population studies,[34,35] scores are not directly comparable because each identifies different levels of psychological distress. Because we were principally interested in relative, rather than absolute levels of psychological distress, we did not consider this a major limitation.

Treatment for anxiety/depression at the time of the survey (hereafter 'current treatment') was self-reported at 9 months and 5 years, defined as a positive response to both of the following questions:

- Has a doctor ever told you that you suffer from depression or serious anxiety?
- Are you currently being treated for this?

Other sociodemographic and pregnancy-related explanatory variables were ascertained from self-reported data collected at 9 months (Table 1).

Statistical analyses

All statistical analyses were completed in STATA/SE, version 13.1 (StataCorp, USA), using survey-specific weights and survey commands to adjust for sampling design and non-response. Logistic regression modelling explored the crude and mutually adjusted effects of ethnicity and migrant status on psychological distress and current treatment at 9 months and 5 years. Further multivariable modelling quantified the extent to which any observed differences were explained by known sociodemographic and pregnancy-related variables; however, because many of these may be considered mediators, rather than confounders, of inequalities experienced by migrant/ethnic

Table 1 – Sociodemographic and pregnancy-related characteristics for participants with Rutter Malaise Inventory score at 9 months (survey-weighted percentages), by migrant status and ethnicity.

Characteristic	Migrant status			Ethnicity					
	Non-migrant ($n = 8627$)	Migrant ($n = 1706$)	Category P-value[a]	White British ($n = 7857$)	Indian ($n = 374$)	Pakistani ($n = 646$)	Bangladeshi ($n = 235$)	Black African ($n = 287$)	Category P-value[a]
Migrants (%)	–	–	–	2.0	47.2	56.1	89.0	75.6	<0.001
Age in years (mean)	28.7	29.7	0.002[c]	28.8	28.9	26.5	26.4	30.5	<0.001[c]
Highest qualification National Vocational Qualification 4/5 (%)	32.8	35.5	<0.001	32.7	44.5	13.8	12.0	44.1	<0.001
Higher managerial/admin/professional employment class (%)	31.1	25.7	<0.001	31.3	30.2	9.9	10.2	23.1	<0.001
Lone parent (%)	13.9	12.0	0.261	13.3	4.1	7.4	6.2	37.2	<0.001
Religion (%)			<0.001						<0.001
None	50.4	20.		52.2	7.9	1.0	1.6	4.6	
Christian/Catholic	45.7	34.2		46.6	4.4	0	0	67.8	
Muslim	2.0	33.1		0.2	13.4	97.8	95.3	26.1	
Hindu/Sikh	1.0	10.5		0.1	72.4	0.8	2.8	0	
Other	0.9	2.3		0.9	0.9	0.3	0.3	1.6	
Any English spoken at home (%)	99.7	84.4	<0.001	100.0	90.5	76.3	67.6	88.3	<0.001
Primiparity (%)	43.0	39.3	0.035	42.9	41.7	33.0	28.9	32.4	<0.001
Preterm birth (%)	7.2	5.5	0.027	7.0	10.1	6.3	8.0	7.9	0.318
Caesarean section (%)	20.5	24.3	0.014	20.5	21.2	19.6	16.1	34.0	<0.001
Planned pregnancy (%)	58.6	56.5	0.235	59.2	61.1	51.9	46.3	36.4	<0.001
Median length of residence (years)[b]	–	11		27	9	11	14	9	

[a] Chi-squared P-value for association between migrant status/ethnicity and characteristic.
[b] Non–survey-weighted median. Migrants only.
[c] Age group P-value.

minority women,[36] results focus primarily on mutually—rather than fully—adjusted results. Individual models for each outcome incorporated all such variables which were deemed to be potentially relevant, for which data were available, were associated with the outcome of interest (Chi-squared $P < 0.1$) and which retained statistical significance ($P < 0.05$) in the final model.

Ethics

Use of MCS data was registered with the UK data service; however, because the study utilised existing data, no separate ethics committee application was required. The original medical research ethical clearance for the first MCS survey was granted from the National Health Service Ethical Authority in February 2001 (MREC/01/6/19) and for the third MCS survey by the London Multicentre Research Ethics Committee of the NHS in December 2005 (REC Reference No. 05/MRE02/46).

Results

Description of the study population

Outcome data were available for 10,333–10,838 women at 9 months and 8044–8728 women at 5 years (Fig. 1). Overall, 2.6% of women had the RMI score missing and 5.1% had K6 score missing, but these proportions varied by ethnicity, being highest for Bangladeshi women (24.3% for RMI and 48.1% for K6). Compared to 1.9% and 2.1% of non-migrants, 14.0% and 27.4% of migrants were missing RMI and K6 data, respectively.

Table 1 shows sociodemographic and pregnancy-related characteristics for the 9 months sample that had RMI data. Migrant women accounted for 10.5% of the sample overall (survey-weighted percentage), including 59.8% of women who were not included in a specific ethnic category. Migrants were slightly older, more highly qualified, less likely to speak English at home, less likely to report primiparity or preterm birth and more likely to report C-section than non-migrants. The proportion migrants in each ethnic minority group ranged from 47.2% (Indian) to 89.0% (Bangladeshi). All sociodemographic characteristics were statistically significantly associated with ethnicity.

Nine-month results

Prevalence of psychological distress was 13.2% among non-migrants and 15.2% among migrants, ranging between ethnic groups from 12.7% (black African) to 23.3% (Pakistani) (Table 2). Prevalence of current treatment was 8.6% among non-migrants and 4.6% among migrants, ranging between ethnic groups from 2.5% (black African) to 8.7% (white British).

In univariable analyses, both migrant status and ethnicity were statistically significantly associated with both outcomes. Compared with non-migrants, migrants had statistically significantly increased odds of psychological distress (odds ratio [OR] 1.18) and decreased odds of treatment (OR 0.51) (Table 2). Compared with white British women, Indian and Pakistani women had a twofold increase in odds of distress (a similar result for Bangladeshi women was not significant). All ethnic minority groups had lower odds of current treatment than white British women. This was statistically significant for Indian (OR 0.52) and black African women (OR 0.27).

After mutual adjustment, the effect of ethnicity was much stronger than migrant status on psychological distress ($P < 0.001$ vs. $P = 0.159$) and current treatment ($P = 0.007$ vs. $P = 0.110$). No independent effect of migrant status was observed for either outcome (Table 2, Fig. 2). Notably, adjustment strengthened the association between ethnic minority status and distress and attenuated the association with current treatment.

The independent effect of ethnicity on both outcomes remained statistically significant even after full adjustment.

Five-year results

Prevalence of psychological distress was 3.1% among non-migrants and 4.4% among migrants, ranging between ethnic groups from 2.9% (white British) to 6.9% (Bangladeshi). Prevalence of current treatment was 7.7% among migrants and 3.6% among non-migrants, ranging between ethnic groups from 1.5% (black African) to 7.7% (white British).

In univariable analyses, ethnicity was statistically significantly associated with both outcomes; however, migrant status was only associated with current treatment (OR 0.45). Compared with white British women, odds of psychological distress remained statistically significantly increased for Indian women (OR 2.33) and Pakistani women (OR 2.37). As at 9 months, all ethnic minority groups had lower odds of current treatment than white British women. This difference was statistically significant for Indian (OR 0.34), Pakistani (OR 0.61) and black African women (OR 0.18). Of note, observed disparities were wider at 5 years than 9 months.

After mutual adjustment, ethnicity was the stronger predictor of distress ($P < 0.001$ vs. $P = 0.402$ for migrant status). However, both variables independently predicted current treatment ($P = 0.018$ for both) (Table 2, Fig. 2). As at 9 months, adjustment strengthened the association between ethnic minority status and distress and attenuated the association with current treatment.

Contrasting with 9-month analyses, the independent effect of ethnicity on both outcomes disappeared after full adjustment (except for black African women). However, the association between migrant status and current treatment prevailed (OR 0.61).

Discussion

Main findings

In unadjusted analyses, this study found a higher risk of psychological distress among migrant compared with non-migrant women in the first postnatal year and at 5 years after the birth of their child, although neither effect was strongly statistically significant. Relative risk of distress varied significantly between ethnic groups at both time points, with Indian and Pakistani women at greatest risk. Despite having equal or greater risk of distress, migrant women were half as

Table 2 – Prevalence and odds ratios for psychological distress and current treatment for depression or anxiety at 9 months and 5 years, by migrant status and ethnicity.

Category		Psychological distress					Current treatment				
		n[a]	Prevalence (%)	Unadjusted OR (95% CI)	Mutually adjusted OR[b] (95% CI)	Fully adjusted OR[c] (95% CI)	*n*[a]	Prevalence (%)	Unadjusted OR (95% CI)	Mutually adjusted OR[b] (95% CI)	Fully adjusted OR[d] (95% CI)
9 months	Migrant status (*P*-value)		–	**0.031**	0.159	0.078		–	**< 0.001**	0.110	0.166
	Non-migrant	8627	13.2	Baseline	Baseline	Baseline	8754	8.6	Baseline	Baseline	Baseline
	Migrant	1706	15.2	**1.18 (1.02–1.37)**	0.84 (0.66–1.07)	0.79 (0.60–1.03)	2084	4.6	**0.51 (0.40–0.66)**	0.74 (0.52–1.07)	0.76 (0.52–1.12)
	Ethnicity (*P*-value)		–	**< 0.001**	**< 0.001**	**< 0.001**		–	**< 0.001**	**0.007**	**0.002**
	White British	7857	12.8	Baseline	Baseline	Baseline	7935	8.7	Baseline	Baseline	Baseline
	Indian	374	22.5	**1.98 (1.38–2.85)**	**2.14 (1.45–3.17)**	**2.26 (1.48–3.47)**	418	4.7	**0.52 (0.27–0.99)**	0.59 (0.30–1.17)	0.63 (0.33–1.22)
	Pakistani	646	23.2	**2.18 (1.67–2.86)**	**2.40 (1.73–3.32)**	**1.90 (1.31–2.75)**	787	6.6	0.74 (0.44–1.25)	0.87 (0.47–1.61)	0.76 (0.39–1.46)
	Bangladeshi	235	17.4	1.43 (0.99–2.10)	**1.67 (1.07–2.61)**	1.26 (0.79–2.00)	317	4.4	0.48 (0.20–1.17)	0.63 (0.24–1.65)	0.51 (0.19–1.37)
	Black African	287	12.7	0.99 (0.63–1.56)	1.13 (0.69–1.85)	0.90 (0.53–1.51)	326	2.5	**0.27 (0.13–0.58)**	**0.34 (0.16–0.73)**	**0.26 (0.12–0.55)**
5 years	Migrant status (*P*-value)		–	0.070	0.402	0.116		–	**< 0.001**	**0.018**	**0.038**
	Non-migrant	6993	3.1	Baseline	Baseline	Baseline	7149	7.7	Baseline	Baseline	Baseline
	Migrant	1051	4.4	1.42 (0.97–2.08)	0.82 (0.52–1.30)	0.66 (0.39–1.11)	1579	3.6	**0.45 (0.32–0.64)**	**0.58 (0.37–0.91)**	**0.61 (0.38–0.97)**
	Ethnicity (*P*-value)		–	**< 0.001**	**< 0.001**	0.381		–	**< 0.001**	**0.018**	0.053
	White British	6475	2.9	Baseline	Baseline	Baseline	6582	7.7	Baseline	Baseline	Baseline
	Indian	284	6.6	**2.33 (1.32–4.11)**	**2.54 (1.40–4.62)**	1.53 (0.75–3.12)	336	2.7	**0.34 (0.16–0.69)**	**0.43 (0.20–0.92)**	0.82 (0.47–1.43)
	Pakistani	372	6.7	**2.37 (1.46–3.85)**	**2.61 (1.60–4.25)**	1.22 (0.58–2.58)	573	4.9	**0.61 (0.39–0.95)**	0.83 (0.50–1.38)	0.69 (0.31–1.54)
	Bangladeshi	119	6.9	2.47 (0.81–7.56)	2.89 (0.91–9.24)	1.42 (0.43–4.63)	239	5.1	0.63 (0.30–1.35)	1.02 (0.45–2.32)	0.83 (0.30–2.28)
	Black African	159	6.0	2.13 (0.98–4.61)	**2.41 (1.20–4.86)**	**2.16 (1.01–4.61)**	249	1.5	**0.18 (0.08–0.41)**	**0.27 (0.12–0.61)**	**0.25 (0.11–0.58)**

CI, confidence interval; OR, odds ratio.
Bold values indicate statistically significant results.
[a] Non–survey-weighted denominators.
[b] Mutually adjusted for migrant status/ethnicity.
[c] Nine-month adjustments: migrant status/ethnicity, age, employment class, highest qualification, lone parent status, planned pregnancy, primiparity. Five-year adjustments: migrant status/ethnicity, age, employment class, highest qualification, primiparity, planned pregnancy, religion.
[d] Nine-month adjustments: migrant status/ethnicity, employment class, highest qualification, lone parent status, planned pregnancy, primiparity, caesarean section. 5-year adjustments: migrant status/ethnicity, highest qualification, planned pregnancy, religion.

likely as non-migrant women to report treatment for anxiety/depression at both time points. Similar disparities affected ethnic minorities, with treatment prevalence substantially lower among black African women compared with white British women at 5 years (1.5% vs 7.7%), despite a higher level of distress (6.0% vs 2.9%).

Mutually adjusted analyses showed ethnicity to be a much stronger predictor than migrant status of relative risks of psychological distress and current treatment, except for one outcome (current treatment for anxiety/depression at 5 years), where the effect of migrant status was independent of the effect of ethnicity. In fully adjusted analyses, the relative risks for some ethnic minority groups attenuated somewhat, suggesting that other factors may have been acting as mediators or confounders.

Strengths and limitations

This study's main strength is that it is based on a large nationally representative sample of mothers and is, therefore, generalisable to England. Furthermore, it uniquely attempts to quantify the effects of both ethnicity and migration on indicators of mental health and care in the first postnatal year and after five years.

However, some important limitations mean that our results may underestimate true effects. First, precision and power were limited by small numbers of ethnic minority and migrant women and a lower number of 'cases' of psychological distress at 5 years (related to the fact that K6 is validated to identify serious, rather than mild or moderate, mental illness). Although effects observed were largely consistent between time points, these were not always statistically significant. Small numbers also prevented inclusion of some important ethnic categories, including black Caribbean and white Irish women.[14] Furthermore, the use of broad ethnic and migrant categories will have led to substantial within-group heterogeneity, particularly in terms of length of residence and premigration/perimigration experience. Importantly, we have not differentiated between forced migration and those who migrate by choice (e.g. refugees vs. economic migrants).

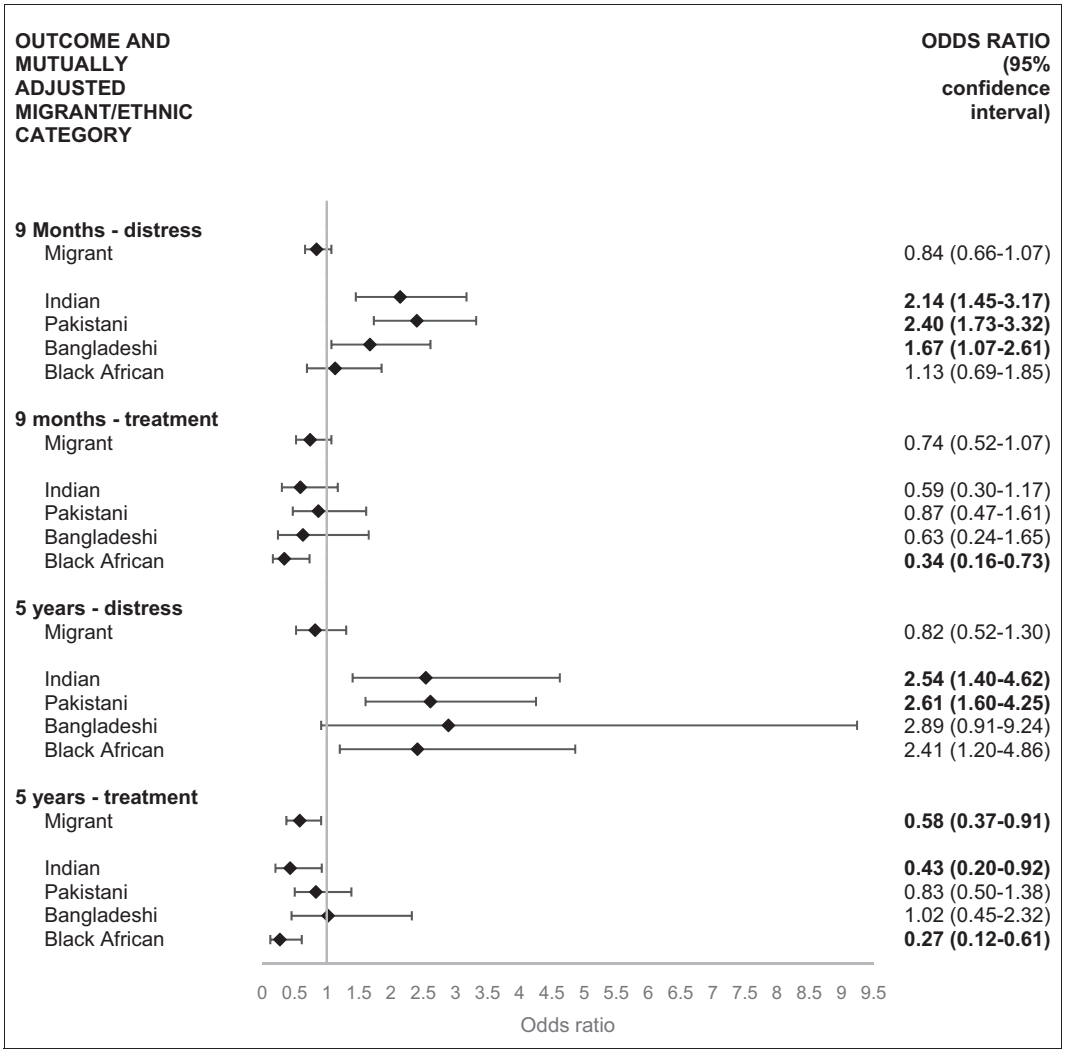

Fig. 2 – Mutually adjusted odds ratios for psychological distress and treatment for anxiety/depression at 9 months and 5 years, by migrant status (migrant compared with non-migrant women) and ethnic minority group (compared with white British). Bold values indicate statistically significant results.

We relied on epidemiological screening tools rather than clinical diagnosis, with limited evidence of cross-cultural validity[37] that may have led to a lower rate of detection of distress among minority cultures. In addition, missingness was strongly associated both with ethnicity and migrant status. Further analyses (not presented here) suggest that language proficiency and socio-economic factors only partially explain this, and we hypothesise higher rates of psychological distress in non-responders. 'Current treatment' of anxiety/depression as an outcome measure relied on self-reporting in response to a two-stage question and thus may lack validity. Interpretation of 'treatment' (in particular psychological vs. pharmacological) may vary between cultures, and we were unable to ascertain whether treatment was not offered or not accepted.

The UK is undergoing a period of rapid change with respect to immigration patterns, policy and legislation. The fact that the inequalities we demonstrate predate some important recent developments, including the official 'hostile environment' policy towards illegal immigration, makes our results even more pertinent, given potential associations of aspects of this policy with increasing stigma and discrimination faced by the wider migrant population.[38,39]

Interpretation and implications

This study's findings are consistent with existing evidence of perinatal mental health inequalities affecting BME women in the UK, particularly those of Asian descent.[15,17] By accounting for both ethnicity and migrant status, this study adds that the disadvantage faced by BME women is likely to exist, regardless of whether they are a first or higher generation migrant. The reasons for this are likely to be complex, context specific and multifactorial. Ethnic minority women in general experience higher levels of social and material deprivation, including social isolation.[20,15] However, socio-economic variables only partially explain differences between groups, thus implicating other risk factors such as cumulative exposure to minority status and accompanying social marginalisation and racism.[19]

Ethnic inequalities in use of mental health services in general are well documented,[16,40] although little research has focused on the perinatal period.[41] Based on a large 2010 survey, Henderson et al. (2013) found minority ethnic groups to have poorer experiences of maternity services than white women.[42] Our findings support evidence from the 2014 National Maternity Survey in England, which shows that non-white women were less likely to be asked about their mental health or to receive support or treatment, either antenatally or postnatally, with Asian women being most at risk.[43] This is despite changes to 2007 National Institute for Health and Care Excellence (NICE) guidance, which recommends routine antenatal and postnatal screening for CMD using 'ultrabrief' case finding questions.[44] Using data from the UK Born in Bradford cohort study conducted between 2007 and 2010, Prady et al.[17] showed that participating Pakistani women (one-third of whom were non-UK born) were less likely than white British women to be screened in primary care or identified as having CMD, for a similar level of psychological distress. Minority ethnic women were 58% less likely to receive treatment for CMD in the first postnatal year, despite higher risk.[18]

In contrast to distress, 5-year findings in our study (mutually adjusted and fully adjusted models) suggest that being a migrant may be associated with poorer access to mental health care, placing women who are both BME and migrant at even greater risk. It is possible that more structured access to health care diminishes this effect in the postnatal period, which could contribute to a lack of statistical significance at 9 months (notwithstanding the caveat of small numbers and potential power implications). In a systematic review of largely European studies, Sarría-Santamera et al.[25] concluded that migrants have a similar or lower use of general health services than native populations, independent from differences in need. Limited UK research suggests this may be true of more recent migrants,[45,46] yet scarce evidence specifically relates to women, who by virtue of their gender may face particular barriers to care.

Disorder identification and treatment depends on both individual and system factors. Some evidence suggests lower levels of 'help seeking' by ethnic minority and migrant women in relation to perinatal and general mental health because of language difficulties, poor health literacy, lack of familiarity with health systems, cultural beliefs and practices, normalisation of pregnancy and postnatal symptoms and practical barriers such as transport costs.[47,48] However, many of these factors place the onus on women, characterising them as 'hard to reach' rather than 'underserved'. Conversely, targeted interventions are needed to reduce system barriers to mental health care for ethnic minority and migrant women that consider language, accessibility of information, cross-cultural applicability of screening instruments, appropriate treatment and support options and ways to address institutional racism.[19,49,41]

Finally, legal entitlement to care is a particularly worrying determinant of migrant and ethnic minority health. Increasingly restricted access to NHS services mean that some women may now be asked to pay upfront for maternity and other secondary care services.[3] In addition to denying care to vulnerable individuals, confusion around the rules can act as a barrier to other women who are entitled to UK NHS health care.[39]

Conclusions

By bringing women into close contact with health services, the perinatal period offers an important window of opportunity to identify and treat CMD, to address inequality and to prevent intergenerational impacts of poor mental health. Ethnic minority and migrant status may act as interrelated risk factors for poor mental health and access to mental health care. Further research into migrant and BME women's mental health needs and experiences is needed, in order to develop NHS policies and practices that are more responsive to an increasingly diverse UK population. Such research would benefit from better routine data collection on country of birth and ethnicity, to monitor, understand and improve migrant health.

Author statements

Ethical approval

Not required (use of MCS data was registered with the UK data service; however, because the study utilised existing data, no separate ethics committee application was required)

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None.

Conflict of interest

The authors declare no conflicts of interest.

REFERENCES

1. Vertovec S. Super-diversity and its implications. *Ethn Racial Stud* 2007 Nov;**30**(6):1024–54.
2. Rechel B, Mladovsky P, Ingleby D, Mackenbach JP, McKee M. Migration and health in an increasingly diverse Europe. *Lancet* 2013 Apr 6;**381**(9873):1235–45.
3. Health protection: Migrant health guide - GOV.UK [Internet]. [cited 2018 Jul 25]. Available from: https://www.gov.uk/topic/health-protection/migrant-health-guide.
4. Collins CH, Zimmerman C, Howard LM. Refugee, asylum seeker, immigrant women and postnatal depression: rates and risk factors. *Arch Womens Ment Health* 2011 Feb;**14**(1):3–11.
5. Lindert J, von Ehrenstein OS, Priebe S, Mielck A, Brähler E. Depression and anxiety in labor migrants and refugees–a systematic review and meta-analysis. *Soc Sci Med* 2009 Jul;**69**(2):246–57.
6. Bhugra D. Migration and mental health. *Acta Psychiatr Scand* 2004 Apr;**109**(4):243–58.
7. Haines N. *Births by parents' country of birth, England and Wales*. 2017. 2016. p. 11. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/parentscountryofbirthenglandandwales/2016.
8. McManus S, Bebbington P, Jenkins R, Brugha T. *Mental health and wellbeing in England: adult psychiatric morbidity survey 2014. Leeds*. 2016.
9. Bauer A, Parsonage M, Knapp M, Iemmi V, Adelaja B, Hogg S. *The costs of perinatal mental health problems* [Internet]. London. 2014. Available from: https://www.centreformentalhealth.org.uk/Handlers/Download.ashx?IDMF=07afd94b-92cb-4e47-8439-94cbf43548d8.
10. Stein A, Pearson RM, Goodman SH, Rapa E, Rahman A, Mccallum M, et al. Effects of perinatal mental disorders on the fetus and child. *Lancet* 2014;**384**(9956):1800–19.
11. Fitzsimons E, Goodman A, Kelly E, Smith JP. Poverty dynamics and parental mental health: determinants of childhood mental health in the UK. *Soc Sci Med* 2017 Feb 1;**175**:43–51.
12. Howard LM, Molyneaux E, Dennis C-L, Rochat T, Stein A, Milgrom J. Non-psychotic mental disorders in the perinatal period. *Lancet* 2014;**384**(9956):1775–88.
13. Gater R, Tomenson B, Percival C, Chaudhry N, Waheed W, Dunn G, et al. Persistent depressive disorders and social stress in people of Pakistani origin and white Europeans in UK. *Soc Psychiatr Psychiatr Epidemiol* 2009 Mar 23;**44**(3):198–207.
14. Weich S, Nazroo J, Sproston K, McManus S, Blanchard M, Erens B, et al. Common mental disorders and ethnicity in England: the EMPIRIC study. *Psychol Med* 2004 Nov;**34**(8):1543–51.
15. Onozawa K, Kumar RC, Adams D, Doré C, Glover V. High EPDS scores in women from ethnic minorities living in London. *Arch Womens Ment Health* 2003 Aug 1;**6**(0):s51–5.
16. Cooper C, Spiers N, Livingston G, Jenkins R, Meltzer H, Brugha T, et al. Ethnic inequalities in the use of health services for common mental disorders in England. *Soc Psychiatr Psychiatr Epidemiol* 2013 May 15;**48**(5):685–92.
17. Prady SL, Pickett KE, Petherick ES, Gilbody S, Croudace T, Mason D, et al. Evaluation of ethnic disparities in detection of depression and anxiety in primary care during the maternal period: combined analysis of routine and cohort data. *Br J Psychiatry* 2016;**208**(5):453–61.
18. Prady SL, Pickett KE, Gilbody S, Petherick ES, Mason D, Sheldon TA, et al. Variation and ethnic inequalities in treatment of common mental disorders before, during and after pregnancy: combined analysis of routine and research data in the Born in Bradford cohort. *BMC Psychiatry* 2016 Dec 12;**16**(1):99.
19. The Synergi Collaborative Centre. *The impact of racism on mental health* [Internet]. 2018. Available from, www.synergicollaborativecentre.co.uk.
20. The Joseph Rountree Foundation. *Poverty and ethnicity in the UK* [Internet]. Bristol. 2007 [cited 2018 Jul 3]. Available from: https://www.jrf.org.uk/sites/default/files/jrf/migrated/files/2006-ethnicity-poverty-uk.pdf.
21. Nazroo J, Iley K. Ethnicity, migration and mental health: the role of social and economic inequalities. In: Bhugra D, Gupta S, editors. *Migration and mental health*. Cambridge: Cambridge University Press; 2010.
22. Anderson FM, Hatch SL, Comacchio C, Howard LM. Prevalence and risk of mental disorders in the perinatal period among migrant women: a systematic review and meta-analysis. *Arch Womens Ment Health* 2017 Jun 8;**20**(3):449–62.
23. Fellmeth G, Fazel M, Plugge E. Migration and perinatal mental health in women from low- and middle-income countries: a systematic review and meta-analysis. *BJOG An Int J Obstet Gynaecol* 2017 Apr;**124**(5):742–52.
24. Falah-Hassani K, Shiri R, Vigod S, Dennis C-L. Prevalence of postpartum depression among immigrant women: a systematic review and meta-analysis. *J Psychiatr Res* 2015 Nov;**70**:67–82.
25. Sarría-Santamera A, Hijas-Gómez AI, Carmona R, Gimeno-Feliú LA. A systematic review of the use of health services by immigrants and native populations. *Publ Health Rev* 2016 Dec 3;**37**(1):28.
26. Lindert J, Schouler-Ocak M, Heinz A, Priebe S. Mental health, health care utilisation of migrants in Europe. *Eur Psychiatry* 2008 Jan;**23**:14–20.
27. Mirowsky J, Ross CE. Measurement for a human science [cited 2019 Jan 22] *J Health Soc Behav [Internet]* 2002 Jun;**43**(2):152–70. Available from, http://www.ncbi.nlm.nih.gov/pubmed/12096697.
28. Plewis I, Calderwood L, Hawkes D, Hughes G, Joshi H. *The Millennium cohort study: technical report on sampling* [Internet], http://www.cls.ioe.ac.uk/library-media/documents/Technical_Report_on_Sampling_4th_Edition.pdf [cited 2018 Jul 3]. Available from: .
29. Doctors of the World. *Access to healthcare in the UK [internet]. London*. 2015 [cited 2018 Jul 3]. Available from: https://www.doctorsoftheworld.org.uk/Handlers/Download.ashx?IDMF=74d892a0-c9df-4a87-9896-e546140e3cc3.
30. Hansen K. *Millennium cohort study first, second, third and fourth surveys: a guide to the datasets* [Internet]. London. 5th ed. 2010. Available from: http://www.cls.ioe.ac.uk/library-media%5Cdocuments%5CMCS Guide to the Datasets v5.pdf.

31. Rutter M, Tizard J, Whitmore K. *Education, health and behaviour*. London: Longman; 1970.
32. Johnson J, Atkinson M, Rosenberg R, Joshi H, Smith K. *Millennium cohort study psychological, developmental and health inventories user guide to the data* [Internet]. London. 3rd ed. 2015. Available from: http://www.cls.ioe.ac.uk/Publications.aspx?sitesectionid=87&sitesectiontitle=Guides+to+Datasets&page=2&sort=4.
33. Kessler RC, Barker PR, Colpe LJ, Epstein JF, Gfroerer JC, Hiripi E, et al. Screening for serious mental illness in the general population [Internet] *Arch Gen Psychiatr* 2003 Feb;**60**(2):184–9 [cited 2015 Jan 14] Available from: http://www.ncbi.nlm.nih.gov/pubmed/12578436.
34. Rodgers B, Pickles A, Power C, Collishaw S, Maughan B. Validity of the Malaise Inventory in general population samples [Internet] *Soc Psychiatr Psychiatr Epidemiol* 1999 Jun;**34**(6):333–41 [cited 2015 Jan 14]. Available from: http://www.ncbi.nlm.nih.gov/pubmed/10422488.
35. Kessler RC, Green JG, Gruber MJ, Sampson NA, Bromet E, Cuitan M, et al. Screening for serious mental illness in the general population with the K6 screening scale: results from the WHO World Mental Health (WMH) survey initiative. *Int J Methods Psychiatr Res* 2010 Jun;**19**(S1):4–22.
36. Kaufman JS, Cooper RS, McGee DL. Socioeconomic status and health in blacks and whites: the problem of residual confounding and the resiliency of race. *Epidemiology* 1997 Nov;**8**(6):621–8.
37. Stolk Y, Kaplan I, Szwarc J. Clinical use of the Kessler psychological distress scales with culturally diverse groups. *Int J Methods Psychiatr Res* 2014 Jun;**23**(2):161–83.
38. Hiam L, Steele S, McKee M. Creating a 'hostile environment for migrants': the British government's use of health service data to restrict immigration is a very bad idea. *Health Econ Policy Law* 2018 Apr 8;**13**(02):107–17.
39. Feldman R. *The impact on health inequalities of charging migrant women for NHS maternity care a scoping study* [Internet]. London. 2017 [cited 2018 Jul 25]. Available from: https://www.maternityaction.org.uk/wp-content/uploads/ChargingReportMarch2017FINALcompressed.pdf.
40. Fitzpatrick R, Kumar S, Nkansa-Dwamena O, Thorne L. *Ethnic inequalities in mental health: promoting lasting positive change report of findings to LankellyChase foundation, Mind, The Afiya Trust and Centre for Mental Health* [Internet]. 2014 [cited 2018 Jul 23]. Available from: https://lankellychase.org.uk/wp-content/uploads/2015/07/Ethnic-Inequality-in-Mental-Health-Confluence-Full-Report-March2014.pdf.
41. Edge D. *National perinatal mental health project - perinatal mental health of black and minority ethnic women: a review of current service provision in England, scotland and wales* [Internet]. 2011 [cited 2018 Jul 24]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/215718/dh_124880.pdf.
42. Henderson J, Gao H, Redshaw M. Experiencing maternity care: the care received and perceptions of women from different ethnic groups [Internet] *BMC Pregnancy Childbirth* 2013 Jan;**13**:196 [cited 2015 Jan 14]. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3854085&tool=pmcentrez&rendertype=abstract.
43. Redshaw M, Henderson J. Who is actually asked about their mental health in pregnancy and the postnatal period? Findings from a national survey. *BMC Psychiatry* 2016;**16**(1):322.
44. National Institute for Health and Care Excellence. *Antenatal and postnatal mental health: clinical management and service guidance* [Internet]. London: NICE; 2014 [cited 2018 Jul 4]. Available from: https://www.nice.org.uk/guidance/cg192/chapter/1-recommendations#providing-interventions-in-pregnancy-and-the-postnatal-period-2.
45. Stagg HR, Jones J, Bickler G, Abubakar I. Poor uptake of primary healthcare registration among recent entrants to the UK: a retrospective cohort study. *BMJ Open* 2012 Jan;**2**(4).
46. Gazard B, Frissa S, Nellums L, Hotopf M, Hatch SL. Challenges in researching migration status, health and health service use: an intersectional analysis of a South London community. *Ethn Health* 2015 Nov 2;**20**(6):564–93.
47. Dennis C-L, Chung-Lee L. Postpartum depression help-seeking barriers and maternal treatment preferences: a qualitative systematic review. *Birth* 2006 Dec;**33**(4):323–31.
48. Schmied V, Black E, Naidoo N, Dahlen HG, Liamputtong P. Migrant women's experiences, meanings and ways of dealing with postnatal depression: a meta-ethnographic studyFoster AM, editor. *PLoS One* 2017 Mar 15;**12**(3):e0172385.
49. Downe SM, Butler E, Hinder S. Screening tools for depressed mood after childbirth in UK-based South Asian women: a systematic review. *J Adv Nurs* 2007 Mar;**57**(6):565–83.