

## RESEARCH ARTICLE

# Demographic and pregnancy-related predictors of postnatal contraception uptake: A cross-sectional study

Malcolm Moffat<sup>1</sup>  | Robyn Jackowich<sup>2</sup> | Christine Möller-Christensen<sup>3</sup> | Claire Sullivan<sup>4</sup> | Judith Rankin<sup>1</sup>

<sup>1</sup>Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne, UK

<sup>2</sup>School of Psychology, Cardiff University, Cardiff, UK

<sup>3</sup>Gateshead Health NHS Foundation Trust, Gateshead, Tyne and Wear, UK

<sup>4</sup>Office for Health Improvement and Disparities, Department of Health and Social Care, Newcastle upon Tyne, UK

## Correspondence

Malcolm Moffat, Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne NE1 2AX, UK.  
Email: [malcolm.moffat@newcastle.ac.uk](mailto:malcolm.moffat@newcastle.ac.uk)

## Funding information

NIHR Applied Research Collaboration (ARC) North East and North Cumbria (NENC), Grant/Award Number: NIHR200173

## Abstract

**Objective:** To examine the uptake of postnatal contraception (PNC) and experiences of PNC care across a geographical region of England.

**Design:** Cross-sectional online survey.

**Setting:** The North East and North Cumbria Integrated Care System (ICS).

**Population:** Women who had completed a pregnancy in the previous 3 years.

**Methods:** The uptake of PNC by accessed method(s) and the availability of preferred method(s) is described, and adjusted odds ratios are reported for group differences in uptake by characteristics of interest.

**Main outcome measures:** Uptake of medically prescribed/administered contraception and uptake of long-acting reversible contraception (LARC) during the postnatal period, and access to preferred PNC methods.

**Results:** Although almost half of respondents (47.1%;  $n = 1178$ ) reinitiated some form of sexual activity during the postnatal period, only 38.7% ( $n = 969$ ) of respondents accessed a medically prescribed/administered contraceptive method postnatally, and only 15.5% ( $n = 389$ ) of respondents accessed a LARC. It is a matter of concern that 18.8% ( $n = 451$ ) of respondents indicated that they were unable to access their preferred PNC. In multivariate analysis, younger age, lower household income, higher multiparity, operative delivery, unplanned pregnancy and not breastfeeding were significant predictors of higher PNC uptake.

**Conclusions:** The uptake of PNC in this cohort was low, with almost a fifth of women unable to access their preferred method. However, there was some evidence that women belonging to groups perceived to be at risk of rapid repeat pregnancy were more likely to access reliable PNC methods.

## KEY WORDS

contraception, LARC, postnatal, postpartum

## 1 | INTRODUCTION

Access to safe and effective contraception is an important human right, and is vital in protecting the reproductive health of women.<sup>1</sup> During the postnatal period (the 8-week period following a birth) the need for reliable contraception is especially important, in view of the considerable risks to

mothers and babies associated with rapid repeat pregnancy.<sup>2,3</sup> However, evidence suggests that many new mothers struggle to have their postnatal contraception (PNC) needs adequately met, and that opportunities to empower women to take control of their post-pregnancy fertility are often unfulfilled.<sup>4,5</sup>

It is estimated that 45% of pregnancies and one-third of births in England are unplanned or associated with

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Authors. *BJOG: An International Journal of Obstetrics and Gynaecology* published by John Wiley & Sons Ltd.

feelings of ambivalence.<sup>6</sup> A 2016 quality statement from the National Institute for Health and Care Excellence (NICE) recommends that ‘women who give birth [should be] given information about, and offered a choice of, all contraceptive methods by their midwife within 7 days of delivery.’<sup>7</sup> The Faculty of Sexual and Reproductive Health (FSRH) goes further, advising that ‘maternity service providers should ensure that all women after pregnancy have access to the full range of contraceptives, including the most effective LARC [long-acting reversible contraception] methods, to start immediately after childbirth’.<sup>8</sup> More recently, the All Party Parliamentary Group (APPG) on Sexual and Reproductive Health in the UK has recommended that the full range of immediate postpregnancy contraception should be made available in abortion, maternity and early pregnancy settings.<sup>9</sup>

The North East and North Cumbria (NENC) Integrated Care System (ICS) is the largest ICS in England, with 3 million inhabitants and an annual birth population of 25 000. An ICS is a partnership of healthcare organisations that is responsible for planning and delivering healthcare services across geographical areas in England. The NENC ICS has the highest rate of conceptions to those aged under 18 years in England, and one of the highest rates of abortions occurring after a recent birth among individuals under 25 years of age.<sup>10,11</sup> In 2022, the *Women's Health Strategy For England* identified access to contraception as a priority area for immediate action, including contraception after childbirth.<sup>12</sup> In a fragmented commissioner-provider system, with multiple organisations responsible for delivering different elements of reproductive health care, providing comprehensive contraception care can be challenging.

The purpose of this cross-sectional study was to explore the current PNC offer in the NENC ICS by means of an online survey of a convenience sample of women who had completed a pregnancy in the preceding 3 years and had used regional healthcare services during and after their pregnancy.

## 2 | METHODS

During the period from 1 December 2022 to 3 April 2023, women aged 16 years or above who had completed a pregnancy in the preceding 3 years in the NENC region were invited to complete an anonymous online survey. The survey was developed by a multidisciplinary steering group of academic and practice partners and piloted by recently pregnant members of a public and patient involvement (PPI) panel, with changes made to the survey prior to launch in response to service-user feedback. The survey collected demographic data describing personal characteristics and individual- and area-level measures of socio-economic status, reproductive history, postnatal contraception use and access to preferred PNC methods

during the respondents’ most recent pregnancies. Several elements of the survey were modelled on questions and response options included in a validated reproductive health survey launched by Public Health England in 2021, including questions that listed the contraceptive methods available. The present study is part of a larger project – the North East and North Cumbria Postnatal Contraception (PoCo) Study – that also examined wider experiences of antenatal, intrapartum and postpartum care, in addition to its primary focus on PNC. Participants were required to respond positively to a series of consent statements before being able to proceed to the main survey questions. Respondents who completed the survey were given the option to be included in a prize draw, with the opportunity to win a £50 shopping voucher. The survey was hosted on the Jisc online surveys platform (<https://app.onlinesurveys.jisc.ac.uk>).

Recruitment to the survey was achieved via multiple routes. A link to the survey was shared on Facebook, Instagram and X (formerly Twitter) social media platforms and by means of targeted online advertising. Posters and business cards were placed in public spaces across the region. Although the aim of the survey was to reach a large convenience sample of participants, efforts were also made to recruit from population groups of particular interest by means of engagement with support organisations and special interest groups. The survey was available in non-English language versions and in paper versions for participants without digital access. With support from the National Institute for Health and Care Research (NIHR) clinical research network (CRN) NENC, ten GP practices in North Cumbria and rural North Northumberland responded to a call to participate as participant identification centres (PICs), running database searches on their practice lists and inviting eligible patients to consider completing the survey by means of a text, email or postal invitation. All eight National Health Service (NHS) Foundation Trusts in the NENC region also participated as PICs and provided current and former service users with written and verbal information about the study.

Statistical analyses were undertaken using SPSS 27 (IBM, Armonk, NY, USA). Descriptive statistics were generated to describe PNC uptake and the availability of preferred PNC method across the whole eligible sample by individual contraceptive type and by grouped methods of interest where applicable (Table 1). Proposed associations between demographic and pregnancy-related characteristics and PNC uptake/satisfaction were explored using odds ratios (ORs), and multivariate logistic regression was used to generate adjusted odds ratios (aORs) that controlled for the other demographic and pregnancy-related variables measured (see footnote to Tables 2–4). Potentially confounding variables used in the adjusted analyses were selected if a significant association was observed with that variable in the unadjusted analysis. Statistical significance was set at  $P < 0.05$ . Ethical approval for this study was granted by the Newcastle and North Tyneside 1 Research Ethics Committee (22/NE/0212).

**TABLE 1** Survey respondents' reported contraceptive use during the 8-week postnatal period.

Resumption of sexual activity following delivery	
Less than 1 week later	0.2% (4)
1–4 weeks later	12.1% (302)
5–8 weeks later	34.9% (872)
More than 8 weeks later	47.5% (1188)
Not applicable	5.3% (133)
Any sexual activity during 8 week postnatal period	47.1% (1178)
Contraceptive methods utilised during 8-week postnatal period <sup>a</sup>	
Male condom	29.7% (742)
None	28.9% (722)
Progestogen-only contraceptive pill (POP)	10.1% (252)
Contraceptive injection	7.2% (179)
Withdrawal method	6.4% (161)
Combined oral contraceptive pill (COCP)	6.0% (151)
Contraceptive pill (type unknown)	5.8% (144)
Contraceptive implant	4.8% (121)
Lactational amenorrhoea method (LAM)	4.1% (103)
Avoiding penetrative sex	3.4% (86)
Hormonal coil (intrauterine system, IUS)	2.3% (57)
Safe period/calendar method/rhythm method	1.6% (39)
Copper coil (intrauterine device, IUD)	1.4% (36)
Fertility awareness apps	1.4% (35)
Emergency contraception (morning after pill or IUD)	1.3% (34)
Tubal ligation	0.9% (23)
Male partner vasectomy	0.8% (20)
Contraceptive patch	0.3% (7)
Female condom	0.2% (4)
Vaginal ring	0.1% (2)
Reported using one method of PNC	57.2% (1432)
Reported using two methods of PNC	12.2% (306)
Reported using three or more methods of PNC	1.9% (49)
Any contraceptive method medically prescribed/administered during 8-week postnatal period <sup>b</sup>	38.7% (969)
Any long-acting reversible contraception (LARC) method medically prescribed/administered during 8-week postnatal period <sup>c</sup>	15.5% (389)
Able to access preferred contraceptive method during 8-week postnatal period	
Yes	51.7% (1238)
No	18.8% (451)
Not applicable (no preferred method/did not want PNC)	29.5% (706)

<sup>a</sup>Note that total is >100% because respondents were able to select more than one option.

<sup>b</sup>Includes all oral contraceptives, patches, rings, permanent contraceptive methods, intrauterine contraception, injections and implants.

<sup>c</sup>Includes all intrauterine contraception, implants and contraceptive injections.

**TABLE 2** Significant predictors of uptake of medically prescribed or administered PNC methods.

Accessed contraception prescribed by a healthcare provider in the 8-week postnatal period	
Variable name/description	aOR <sup>a</sup> (95% CI)
Age at time of pregnancy	
≤19 years	Ref.
20–24 years	<b>0.354* (0.164–0.764)</b>
25–29 years	<b>0.302* (0.143–0.636)</b>
30–34 years	<b>0.216* (0.102–0.454)</b>
35–39 years	<b>0.182* (0.084–0.393)</b>
≥40 years	<b>0.097* (0.032–0.291)</b>
Household income	
£39,999 or less	Ref.
£40,000–£69,000	<b>0.784* (0.622–0.988)</b>
£70,000 and above	0.889 (0.663–1.191)
Self-reported mental health	
Very good	Ref.
Good	<b>0.687* (0.525–0.898)</b>
Fair	0.761 (0.556–1.041)
Bad	0.647 (0.391–1.070)
Very bad	1.155 (0.359–3.714)
Parity	
1	Ref.
2	1.059 (0.861–1.302)
3	0.931 (0.658–1.318)
4+	<b>1.877* (1.095–3.221)</b>
Mode of delivery	
Vaginal delivery	Ref.
Assisted delivery (forceps/ventouse delivery)	<b>1.341* (1.014–1.775)</b>
Planned caesarean section	<b>1.356* (1.035–1.778)</b>
Emergency caesarean section	<b>1.410* (1.082–1.837)</b>
Breastfeeding	
Any duration of breastfeeding	Ref.
No breastfeeding	<b>1.505* (1.222–1.852)</b>

<sup>a</sup> Adjusted for age, relationship status, ethnicity, place of birth, postcode IMD quintile, education, household income, physical health, parity, pregnancy intention, breastfeeding status, gestational diabetes and postnatal depression.

\*  $P < 0.05$ .

Bold values are statistically significant.

### 3 | RESULTS

A total of 3088 survey responses were received, with 2509 responses eligible for inclusion in analyses after ineligible submissions were excluded. Most exclusions were made for participants submitting non-UK postcodes and/or returning internally inconsistent responses. Sample demographic

**TABLE 3** Significant predictors of uptake of postnatal long-acting reversible contraceptive (LARC) methods.

Accessed LARC in 8-week postnatal period	
Variable name/description	aOR <sup>a</sup> (95% CI)
Age at time of pregnancy	
≤19 years	Ref.
20–24 years	<b>0.255* (0.103–0.633)</b>
25–29 years	<b>0.223* (0.090–0.552)</b>
30–34 years	<b>0.174* (0.069–0.439)</b>
35–39 years	<b>0.129* (0.047–0.352)</b>
≥40 years	<b>0.076* (0.013–0.428)</b>
Self-reported physical health	
Very good	Ref.
Good	1.329 (0.938–1.882)
Fair	<b>1.620* (1.050–2.498)</b>
Bad	0.945 (0.323–2.758)
Very bad	0.492 (0.053–4.552)
Self-reported mental health	
Very good	Ref.
Good	<b>0.626* (0.437–0.897)</b>
Fair	0.902 (0.602–1.352)
Bad	0.516 (0.259–1.027)
Very bad	1.804 (0.521–6.242)
Pregnancy intention	
Planned	Ref.
Unplanned	<b>1.607* (1.124–2.299)</b>
Ambivalent	1.161 (0.835–1.613)

<sup>a</sup>Adjusted for age, relationship status, postcode IMD quintile, education, household income, employment status, physical health, mental health, disability status, parity, history of termination, pregnancy risk classification, pregnancy intention, breastfeeding status, gestational diabetes and postnatal depression.

\* $P < 0.05$ .

Bold values are statistically significant.

characteristics are summarised in Table 2: 73.1% ( $n = 1810$ ) of respondents were aged between 25 and 34 years at the time of their most recent pregnancy, and 51.1% ( $n = 1128$ ) lived in postcodes in Index of Multiple Deprivation (IMD) quintiles 1 and 2, representing the 40% most deprived postcode areas in England. The English IMD score is a relative measure of area-level deprivation based on several deprivation domains. Respondents were mostly straight/heterosexual (95.2%,  $n = 2375$ ), mostly white British (96.1%,  $n = 2399$ ) and around half were married at the time of their most recent pregnancy (52.8%,  $n = 1316$ ). Survey sample demographic characteristics in relation to population characteristics are summarised in Table S1. Although broadly aligned in relation to age and IMD postcode quintile, it is noted that the survey sample did not fully reflect the ethnic diversity of the background population, or the disability or educational attainment population profile for the region. All logistic regression analyses are reported in Tables S2–S4.

**TABLE 4** Significant predictors of access to preferred postnatal contraception (PNC) method.

Accessed preferred PNC method during the 8-week postnatal period	
Variable name/description	aOR <sup>a</sup> (95% CI)
Sexual orientation	
Straight/heterosexual	Ref.
Other	<b>0.567* (0.345–0.931)</b>
Ethnicity	
White British/UK	Ref.
Any other ethnicity	<b>2.116* (1.054–4.249)</b>
Education	
Level 1	Ref.
Level 2	0.539 (0.257–1.131)
Level 3	0.509 (0.245–1.061)
Level 4 and above	<b>0.449* (0.216–0.933)</b>
Self-reported mental health	
Very good	Ref.
Good	<b>0.502* (0.353–0.716)</b>
Fair	<b>0.542* (0.363–0.805)</b>
Bad	0.659 (0.348–1.248)
Very bad	0.473 (0.132–1.698)
Breastfeeding	
Any duration of breastfeeding	Ref.
No breastfeeding	<b>1.297* (1.004–1.674)</b>

<sup>a</sup>Adjusted for age, sexual orientation, household income, physical health, mental health, parity, pregnancy intention, mode of delivery and breastfeeding status.

\* $P < 0.05$ .

Bold values are statistically significant.

### 3.1 | Postnatal contraceptive uptake

In all, 47.1% ( $n = 1178$ ) of survey respondents indicated that they resumed sexual activity within 8 weeks of completing their most recent pregnancy (Table 1). However, although 71.1% of respondents reported using one or more contraceptive methods during this period, only 38.7% ( $n = 969$ ) used a more effective contraceptive method that was medically prescribed/administered, and only 15.5% ( $n = 389$ ) used a LARC (for a description of method groupings, see the footnote to Table 1). Almost a third (29.7%,  $n = 742$ ) of respondents reported using condoms during the postnatal period, 21.9% ( $n = 547$ ) used oral contraceptives, 4.1% ( $n = 103$ ) practiced the lactational amenorrhoea method (LAM) and 1.7% ( $n = 43$ ) accessed permanent contraception methods (tubal ligation or male partner vasectomy). Notably, only 43.6% ( $n = 514$ ) of the 1178 participants who indicated that they resumed sexual activity within 8 weeks of delivery reported using some form of medically prescribed or administered contraception during that period.

Just over half (51.7%,  $n = 1238$ ) of participants indicated that they were able to access their preferred contraceptive

method within 8 weeks of completing their most recent pregnancy, but 18.8% ( $n=451$ ) said that they were unable to do so. The remaining 29.5% ( $n=706$ ) indicated that they did not want PNC or did not have a preferred method.

### 3.2 | Demographic predictors of PNC uptake

Younger women in this sample were significantly more likely to access any medically prescribed contraception or LARC during the postnatal period than women in older age categories (Tables 1 and 2). The uptake of any medically prescribed contraceptive method ranged from 71.4% ( $n=25$ ) in women aged 19 years or under to 19.4% ( $n=7$ ) among women aged 40 years or above, and the uptake of LARC ranged from 51.4% ( $n=18$ ) to 5.6% ( $n=2$ ) in the same age categories. These associations were statistically significant, followed a clear trend (with uptake decreasing with increasing age), and persisted after adjusting for other variables.

Across four measures of socio-economic status (SES; household income, educational attainment, employment status and home postcode IMD quintile), women in lower SES groups were consistently more likely to access any medically prescribed contraception and/or LARC postnatally than women in higher SES groups, with clear evidence of a trend in uptake decreasing with increasing SES. However, after adjusting for potential confounding factors, the only statistically significant association that persisted was in relation to the lower uptake of any medically prescribed contraception among women with an annual household income of £40,000–£69,000, compared with women with a household income of less than £40,000.

Patterns of uptake in relation to self-reported physical and mental health were, for the most part, not significant, but differences in some individual categories were significant without following any clear trend.

### 3.3 | Demographic predictors of accessing preferred PNC

Women who identified as lesbian/bisexual/queer were significantly less likely to have been able to access their preferred PNC method than women who described themselves as straight/heterosexual (63.1%,  $n=53$ , vs 73.7%,  $n=1179$ ); this association persisted following adjustment for potential confounding factors (Table 4). Women who were non-white British were significantly more likely to indicate that they had been able to access their preferred PNC method than white British women (82.8%,  $n=53$ , vs 72.9%,  $n=1182$ ). Some evidence emerged of lower access to preferred PNC method among respondents who self-reported their mental health as less than 'very good', but this was not consistent for all mental health categories.

### 3.4 | Pregnancy-related predictors of PNC uptake

Women who had had four or more viable pregnancies were found to be significantly more likely to access any medically prescribed PNC or LARC than women with lower parities (Tables 2 and 3). For any medically prescribed PNC, this association persisted after adjusting for potential confounding factors. Women who delivered their most recent pregnancy by caesarean section (planned and emergency) or with forceps/ventouse were also found to be significantly more likely to access any medically prescribed PNC method than women who had an unassisted vaginal delivery.

Pregnancy intention, wherein the respondent's most recent pregnancy was described as unplanned or ambivalent, was a significant predictor of PNC uptake, but only the higher uptake of postnatal LARC following an unplanned pregnancy remained significant after adjusting for other variables.

Women who did not breastfeed following their most recent pregnancy were more likely to access any medically prescribed PNC method or LARC than breastfeeding mothers (48.6%,  $n=372$ , vs 34.4%,  $n=596$ ; 19.3%,  $n=148$ , vs 13.9%,  $n=241$ , respectively), but these associations were only robust to multivariate logistic regression in the case of any medically prescribed PNC.

### 3.5 | Pregnancy-related predictors of accessing preferred PNC

Pregnancy-related characteristics were not significant predictors of women accessing their preferred PNC method, with the exception of breastfeeding status: non-breastfeeding women were more likely to report being able to access their preferred PNC method compared with women who breastfed (Table 4).

## 4 | DISCUSSION

### 4.1 | Main findings

This study found that the uptake of the most effective forms of PNC was low in the NENC ICS, and that almost one-fifth of respondents were unable to access their preferred method of PNC. Although many demographic and pregnancy-related characteristics were not significantly associated with PNC uptake, women in this sample who were younger, had a lower household income, did not breastfeed, delivered by caesarean section, had three or more previous viable pregnancies and/or whose most recent pregnancy was unplanned were more likely to access reliable PNC methods. Women who identified as lesbian/bisexual/queer, were white British and who breastfed were more likely to say that they had been unable to access their preferred PNC.



## 4.2 | Strengths and limitations

The large sample size and extensive geographical reach of the survey (largely reflecting the demographic diversity of the background population in relation to age and SES, but *not* in relation to ethnicity) are key strengths of this study. As an online survey, the ability to describe sensitive topics anonymously may also have facilitated participation for some respondents. However, the small number of respondents from some subgroups is a weakness, and this precluded a more granular appraisal of the impact of ethnicity and gender identity on PNC uptake/satisfaction. Some of the associations in relation to these subgroups may have proven significant with a larger sample. That the data were self-reported is also a potential weakness: more than 500 ineligible responses were excluded and, given that women were asked to describe events that may have occurred up to 3 years ago, there was the potential for recall bias.

## 4.3 | Interpretation

The association between younger age and higher uptake of PNC in this cohort is noteworthy, as research in other settings has found that teenage mothers are less likely to access postnatal care following discharge from hospital.<sup>13</sup> The finding that women in older age categories are significantly *less* likely to access PNC care is also important. There may be a perception among healthcare providers that PNC is less valued and desired among older, potentially perimenopausal women. However, a US study estimated that as many as 75% of pregnancies to women aged over 40 years are unplanned, and qualitative research has reported that the PNC care of women who have *in vitro* fertilisation (IVF) pregnancies is often suboptimal.<sup>14,15</sup>

The finding that women in lower SES groups were more likely to access PNC is in keeping with research in other high-income settings.<sup>16</sup> Given that low income has been identified as an important risk factor for unplanned pregnancy, targeting PNC services at more socio-economically disadvantaged women may be beneficial.<sup>17</sup> However, this approach may be ethically contentious, and it is incumbent on providers to avoid the risks of contraceptive coercion.<sup>18,19</sup> Although LARC methods may reduce the risk of rapid repeat and unplanned pregnancy, they will not, on their own at least, meaningfully address the social phenomena that make these outcomes more likely among women from lower SES groups.

The significant association between a small number of pregnancy-related/reproductive characteristics and PNC uptake highlights opportunities for maternity care providers to consider how they might look to deliver PNC care in response to patient profiles. In this sample, women with higher parities (parity 4+) were significantly more likely to access any medically prescribed PNC than women with lower parity. Women with higher parities are less likely to indicate a desire for further future pregnancies, and grand

multiparity (parity 5+) may be associated with an increased risk of some adverse maternal outcomes.<sup>20,21</sup> The observation that women in this sample who had a caesarean section were more likely to access any medically prescribed PNC method but *not* more likely to access LARC methods is intriguing, and suggests that opportunities to site intrauterine contraception at the time of caesarean section are not currently widely offered or accessed. Work remains to be done to utilise the opportunities associated with an operative delivery to deliver more comprehensive PNC options.

The finding that women who do not breastfeed are more likely to access more effective PNC is intuitive. However, although LAM may be an effective approach to family planning for up to 6 months postpartum for many women, it is user-dependent and does not provide longer-term protection of the type afforded by LARC methods. As such, FSRH recommends that PNC should be initiated by breastfeeding and non-breastfeeding mothers as soon as possible following delivery.<sup>8</sup>

Women who identified as gay/bisexual/queer were less likely to indicate that they were able to access their preferred PNC method than heterosexual women. Although there was not a significant difference between these two groups in terms of PNC uptake, this finding suggests that providers are falling short of meeting the needs of LGBTQ+ women in regard to their PNC preferences. Research in other settings has shown that women from a sexual minority group often experience higher rates of unintended pregnancy than heterosexual women, and has described queer-specific barriers to accessing effective contraception.<sup>22,23</sup> The finding reported here suggests that these barriers persist in the postnatal period. The observation that respondents from ethnic minorities were *more* likely to have been able to access their preferred PNC method, but not more likely to access effective methods of PNC, is intriguing. This low PNC uptake but relatively high PNC 'satisfaction' seen in the non-white UK group may reflect diverse sociocultural attitudes towards contraception. Ultimately, qualitative research is required to understand the nuance of these findings. The finding that women whose self-reported mental health was less than 'very good' were less likely to be able to access their preferred PNC method is potentially noteworthy, but the inconsistency of this finding across mental health categories suggests that this finding should be interpreted with caution. However, PND has been cited as a risk factor for rapid repeat pregnancy, and unplanned pregnancy may perpetuate mental health symptoms.<sup>24-26</sup>

The relatively low uptake of PNC in this UK-based high-income cohort reflects some of the challenges of providing comprehensive postnatal family planning care in global settings. Despite family planning provision being identified as a key element of antenatal care, a previous systematic review proposed that the unmet need for PNC may be as high as 59.4% across some parts of the low- and middle-income world, and another study has highlighted shortcomings in PNC services in these settings.<sup>27-29</sup> The LOWE (LARC ForWard counselling) trial in Sweden has identified the

potential impact for structured contraceptive counselling to increase LARC uptake and reduce the risk of short interpregnancy intervals.<sup>30</sup> In global settings, where maternal mortality and morbidity remains a serious threat, the need for effective evidence-based approaches to PNC provision is more urgent still.

## 5 | CONCLUSION

This study sheds light on the characteristics of PNC users in a large English region/ICS and identifies unmet need in the provision of PNC care. However, there is evidence that some of the women at greatest risk of rapid repeat pregnancy are more likely to access the most effective PNC methods. This challenges the assumption of the inverse care law, and may signify targeted activities on the part of provider organisations to reach those with greatest need. Ultimately, a policy of proportionate universalism that delivers targeted activities with 'high risk' subgroups proportionate to their need, while also being universally accessible, is likely to be the most effective means of achieving the public health and patient benefits offered by comprehensive PNC coverage.

### AUTHOR CONTRIBUTIONS

MM, CS and JR acquired the funding for the study. All authors conceptualised and designed the study. MM, RJ, CM-C and JR curated the data and were responsible for formal analysis, investigation and methodology. All authors were responsible for project administration and management of resources. MM wrote the original draft of this article, and all authors were responsible for reviewing and editing it. All authors accept responsibility for the paper as published.

### ACKNOWLEDGEMENTS

The authors acknowledge and thank the members of the multidisciplinary steering group who supported the delivery of this research (Dawn Phillips, Sue Mann, Rebecca Scott, Karen Armstrong, Vicky Gilroy, Michelle Stamp, Helen Horton, Emma Senior and Cathy Harvey), and the PPI group members who provided invaluable advice on the design and delivery of the project. The authors also acknowledge the contribution made by the following PICs: County Durham and Darlington NHS Foundation Trust; Gateshead Health NHS Foundation Trust; Northumbria Healthcare NHS Foundation Trust; The Newcastle upon Tyne Hospitals NHS Foundation Trust; South Tyneside and Sunderland NHS Foundation Trust; North Cumbria Integrated Care NHS Foundation Trust; North Tees and Hartlepool NHS Foundation Trust; South Tees Hospitals NHS Foundation Trust; Lowther Medical Centre, Whitehaven; James Street Group Practice, Workington; Fellview Healthcare, Whitehaven; Eden Medical Group, Carlisle; Carlisle Healthcare, Carlisle; Aspatria Medical Group, Aspatria; Well Close Medical Group, Berwick; Wooler Health, Wooler; Belford Medical Practice, Belford; and Amble Health Centre, Amble.

### FUNDING INFORMATION

This study was funded by the National Institute for Health and Care Research (NIHR) Applied Research Collaboration (ARC) North East and North Cumbria (NIHR200173, study reference OFC2021-117). The award application was subject to external peer review, including review by a Patient and Public Involvement (PPI) panel. The funder was not involved in conducting the research or in writing this article. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

### CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests associated with this work.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

### ETHICS APPROVAL

Ethical approval for this study was granted by the Newcastle and North Tyneside 1 Research Ethics Committee (22/NE/0212).

### ORCID

Malcolm Moffat  <https://orcid.org/0000-0001-8808-2626>

### REFERENCES

1. World Health Organisation (WHO). Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations. Luxembourg: WHO Press; 2014.
2. Ahrens KA, Nelson H, Stidd RL, Moskosky S, Hutcheon JA. Short interpregnancy intervals and adverse perinatal outcomes in high-resource settings: an updated systematic review. *Paediatr Perinat Epidemiol.* 2019;33(1):O25–O47.
3. Tessema GA, Marinovich ML, Haberg SE, Gissler M, Mayo JA, Nassar N, et al. Interpregnancy intervals and adverse birth outcomes in high-income countries: an international cohort study. *PLoS One.* 2021;16(7):e0255000.
4. Carrandi A, Bull C, Hu Y, Grzeskowiak LE, Teede H, Black K, et al. Patterns in the provision of government-subsidised hormonal postpartum contraception in Queensland, Australia between 2012 and 2018: a population-based cohort study. *BMJ Sex Reprod Health.* 2024;50:13–20.
5. Thwaites A, Logan L, Nardone A, Mann S. Immediate postnatal contraception: what women know and think. *BMJ Sex Reprod Health.* 2019;45:111–7.
6. Wellings K, Jones K, Mercer CH, Tanton C, Clifton S, Datta J, et al. The prevalence of unplanned pregnancy and associated factors in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Lancet.* 2013;382(9907):1807–16.
7. National Institute for Health and Care Excellence (NICE). Contraception quality standard QS129. Quality statement 4: contraception after childbirth [Internet]. London: NICE; 2016 [cited 2023 Sep 22]. Available from: <https://www.nice.org.uk/guidance/qs129/chapter/Quality-statement-4-Contraception-after-childbirth>
8. The Faculty of Sexual and Reproductive Healthcare (FSRH). FSRH guideline contraception after pregnancy [Internet]. London: FSRH; 2017 [updated 2020 Oct; cited 2023 Sep 22]. Available from: <https://www.fsrh.org/documents/contraception-after-pregnancy-guideline-january-2017/>

9. All Party Parliamentary Group on Sexual and Reproductive Health in the UK (APPG). Women's lives, women's rights: strengthening access to contraception beyond the pandemic [Internet]. London: FSRH; 2020 [cited 2023 Sep 22]. Available from: <https://www.fsrh.org/documents/full-report-december-womens-lives-womens-rights/>
10. Office for Health Improvement and Disparities (OHID). Public health profiles: teenage mothers 2021/22. *Fingertips*; 2023 [cited 2023 Sep 22]. Available from: <https://fingertips.phe.org.uk/search/teenage#page/3/gid/1/pat/15/par/E92000001/ati/6/are/E12000004/iid/90811/age/244/sex/2/cat/-1/ctp/-1/yr/1/cid/4/tbm/1>
11. Office for Health Improvement and Disparities (OHID). Public health profiles: under 25s repeat abortions (%) 2021. *Fingertips*; 2023 [cited 2023 Sep 22]. Available from: <https://fingertips.phe.org.uk/search/abortion#page/3/gid/1/pat/15/par/E92000001/ati/6/are/E12000004/iid/90741/age/156/sex/2/cat/-1/ctp/-1/yr/1/cid/4/tbm/1>
12. Department of Health and Social Care (DHSC). Women's health strategy for England [Internet]. London: DHSC; 2022 [cited 2023 Oct 10]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1100721/Womens-Health-Strategy-England-web-accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1100721/Womens-Health-Strategy-England-web-accessible.pdf)
13. Smith HC, Saxena S, Petersen I. Postnatal checks and primary care consultations in the year following childbirth: an observational cohort study of 309 573 women in the UK, 2006-2016. *BMJ Open*. 2020;10:e036835.
14. Long ME, Faubion SS, MacLaughlin KL, Pruthi S, Casey PM. Contraception and hormonal management in the perimenopause. *J Womens Health (Larchmt)*. 2015;24(1):3-10.
15. Thwaites A, Hall J, Barrett G, Stephenson J. Contraception after in vitro fertilisation (IVF): a qualitative study of the views of women who have had spontaneous pregnancies after successful IVF. *Reprod Health*. 2022;19:40.
16. Morgan CR, Liu H. The relationship between area deprivation and prescription of long-acting reversible contraception in women of reproductive age in Lothian, Scotland, UK. *J Fam Plann Reprod Health Care*. 2017;43:281-8.
17. Metcalfe A, Talavlikar R, du Prey B, Tough SC. Exploring the relationship between socioeconomic factors, method of contraception and unintended pregnancy. *Reprod Health*. 2016;13:28.
18. Wale J, Rowlands S. The ethics of state-sponsored and clinical promotion of long-acting reversible contraception. *BMJ Sex Reprod Health*. 2021;47:e11.
19. Kathawa CA, Arora KS. Implicit bias in counseling for permanent contraception: historical context and recommendations for counseling. *Health Equity*. 2020;4(1):326-9.
20. Hill B, Ling M, Mishra G, Moran LJ, Teede HJ, Bruce L, et al. Lifestyle and psychological factors associated with pregnancy intentions: findings from a longitudinal cohort study of Australian women. *Int J Environ Res Public Health*. 2019;16:5094.
21. Lee KE, Wen T, Faye AS, Huang Y, Hur C, Friedman AM. Delivery risks and outcomes associated with grand multiparity. *J Matern Fetal Neonatal Med*. 2022;35(25):7708-16.
22. Higgins JA, Carpenter E, Everett BG, Greene MZ, Haider S, Hendrick CE. Sexual minority women and contraceptive use: complex pathways between sexual orientation and health outcomes. *Am J Public Health*. 2019;109(12):1680-6.
23. Wingo E, Ingraham N, Roberts SCM. Reproductive health care priorities and barriers to effective care for LGBTQ people assigned female at birth: a qualitative study. *Womens Health Issues*. 2018;28(4):350-7.
24. Huynh ST, Yokomichi H, Akiyama Y, Kojima R, Horiuchi S, Ooka T, et al. Prevalence of and factors associated with unplanned pregnancy among women in Kosu, Japan: cross-sectional evidence from Project Kosu, 2011-2016. *BMC Pregnancy Childbirth*. 2020;20:397.
25. Bahk J, Yun S-C, Kim U, Khang Y-H. Impact of unintended pregnancy on maternal mental health: a causal analysis using follow up data of the Panel Study on Korean Children (PSKC). *BMC Pregnancy Childbirth*. 2015;15:85.
26. Muskens L, Boekhorst MGBM, Kop WJ, van den Heuvel MI, Pop VJM, Beerthuis A. The association of unplanned pregnancy with perinatal depression: a longitudinal cohort study. *Arch Womens Ment Health*. 2020;25:611-20.
27. Dev R, Kohler P, Feder M, Unger JA, Woods NF, Drake AL. A systematic review and meta-analysis of postpartum contraceptive use among women in low- and middle-income countries. *Reprod Health*. 2019;16:154.
28. McCauley H, Lowe K, Furtado N, Mangiaterra V, van den Broek N. What are the essential components of antenatal care? A systematic review of the literature and development of signal functions to guide monitoring and evaluation. *BJOG*. 2022;129:855-67.
29. Madaj B, Gopalakrishnan S, Quach A, Filiaci S, Traora A, Bakusa D, et al. Where is the 'C' in antenatal care and postnatal care: a multi-country survey of availability of antenatal and postnatal care in low- and middle-income settings. *BJOG*. 2022;129:1546-57.
30. Emtell Iwarsson K, Envall N, Bizjak I, Bring J, Kopp Kallner H, Gemzell-Danielsson K. Increasing uptake of long-acting reversible contraception with structured contraceptive counselling: cluster randomised controlled trial (the LOWE trial). *BJOG*. 2021;128:1546-54.

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Moffat M, Jackowich R, Möller-Christensen C, Sullivan C, Rankin J. Demographic and pregnancy-related predictors of postnatal contraception uptake: A cross-sectional study. *BJOG*. 2024;00:1-8. <https://doi.org/10.1111/1471-0528.17821>