Evaluating the Public Health Prevention in Maternity Programme in the North East and North Cumbria

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Executive summary

Introduction

Maternity is a critical time of change. Care during this time is structured and time-limited but offers an opportunity to enhance health outcomes for mother and baby. This report outlines our evaluation of the Public Health Prevention in Maternity (PHPiM) Programme implemented in the North East and North Cumbria Local Maternity and Neonatal System (LMNS). The programme was developed following the publication of *Better Births*, the National Maternity Review in 2016, and the *Maternity Transformation Programme* which both recommended improving maternity services in England. The PHPiM programme, having demonstrated significant impact, notably in the areas of smoking in pregnancy and breastfeeding, has been further funded for a two-year period from April 2021 by the North East Commissioning Support (NECS) Transformation Fund, with contributions from Local Authority. This retrospective evaluation was commissioned in April 2023.

Using a health inequalities lens, PHPiM was designed to improve maternity services for all women[1] and families across five key areas, specifically: tobacco dependence in pregnancy, breastfeeding, perinatal mental health, reproductive health and safe pregnancy spacing, and maternal healthy weight. This was achieved through generating guidance and tools for best practice that have been implemented across the region, and championing interprofessional collaboration. The programme also aimed to target 'business as usual' areas, specifically: alcohol in pregnancy, immunisations and 'Making Every Contact Count' (i.e., an approach to support people in taking positive steps to improve their health and wellbeing through everyday interactions). Having demonstrated impact particularly in the areas of tobacco smoking and breastfeeding, the programme has also extended its remit to support the needs of the Local Maternity and Neonatal System such as addressing maternal health equity and infant health. Previous positive evaluative work, such as the UNICEF Baby Friendly Initiative Regional Status Report, Hartlepool and South Tyneside and Sunderland Small Area Breastfeeding Initiatives Reports, and various evaluations of tobacco dependence initiatives (e.g., Smoke Free app, NHS-funded tobacco dependence services), and a pre-evaluation stakeholder survey conducted by an independent research company (Bluegrass), informed the focus areas for this evaluation.

Evaluation Aim

This evaluation aimed to explore the impact of PHPiM on health and care (including practice) outcomes, and health and care inequalities. The resulting report identifies areas of best practice as well as service gaps, and generates recommendations for future practice, service commissioning, and research. It also aimed to summarise the evidence for the impact of the programme on care and practice to support consistency in services provided.

[1] Throughout this report, we will use the terms pregnant people/women to be inclusive of all women and people who identify as women or non-binary and have had a child/children.

Methods

The evaluation used multi-methods comprising analysis of routinely collected data, document analysis and qualitative interviews. Primary data collection (i.e., qualitative interviews) focused on the following priority areas: **perinatal mental health, reproductive health,** and **maternal healthy weight**.

Findings

Document analysis revealed that there was various documentation to support embedding public health prevention within maternity. This included implementation documents, as well as standard operating procedures for addressing the key areas under evaluation. There were also 'easy read' documents for parents to access. There was also evidence of wider programme dissemination to professionals and stakeholders, through presentations and a report.

Quantitative analyses of aggregate data showed that with respect to **perinatal mental health**, 4 in 10 women had a diagnosis of depression and anxiety. Service data showed an increasing trend in referral rates as well as access to treatment within the 28 days of referral. Concerning **reproductive health and safe pregnancy spacing**, there has been an increase in the average time from birth to booking for a subsequent pregnancy. Regarding **maternal healthy weight**, a large proportion of bookings had recorded Body Mass Index (BMI). Data show that more than half of women with their BMI recorded at 15 weeks' gestation fell into an 'at risk' category (i.e., overweight, obese, severely obese) and there was also increased identification of gestational diabetes (GDM).

Qualitative interviews with providers revealed responses related to overall **programme strengths** (e.g., commitment/buy in to the prevention agenda, and facilitating networks across the NENC for shared learning), alongside **strengths related specifically to PHPiM implementation** (the programme as a guide for focus, and staff commitment and engagement). **Challenges to PHPiM implementation** were also recognised (e.g., evidencing medium/long-term outcomes, limited workforce capacities, challenges with matching resources and demand, and diverse population needs). Finally, providers noted the **impact of PHPiM on practice and care** (e.g., the programme's role in facilitating and improving the provision of care under three target areas; perinatal mental health, maternal healthy weight and reproductive health).

Interviews with parents identified **factors which can facilitate the delivery of PHPiM in routine maternity care** (e.g., continuity of care, involving partners in care) and the impact of PHPiM on the three priority areas: **perinatal mental health**, **reproductive health**, and **maternal healthy weight**.

Discussion and recommendations

This evaluation identified the strengths of PHPiM programme as a package of support for healthcare professionals to deliver their care to women throughout the perinatal period. Specifically, there is adequate professional support for addressing perinatal mental health, through provision of assessment tools and development of care pathways, for example. Data on reproductive health and safe pregnancy spacing show longer periods between birth and booking for a subsequent pregnancy, and providers reported increased access to training around provision of postnatal contraception. On maternal healthy weight, there has been an increase in the recording of Body Mass Index (BMI) at booking, and providers shared having increased access to support to destigmatise weight-related conversations, leading them to discuss weight management with greater confidence. An area for improvement across the priority areas under evaluation includes comprehensive, mandated data collection to support long-term monitoring of health outcomes and programme evaluation. To build on the success of PHPiM, the team should be supported to identify and nurture future leaders in public health prevention within maternity, and to develop care and service pathways that encourage interprofessional collaboration.

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1. Background and scope

The publication of *Better Births*, the *Maternity Transformation Programme* (2016) (1) and the NHS Long Term Plan (2019) (2), have led the North East and North Cumbria (NENC) Public Health Prevention in Maternity Steering Group with representation from LMNS boards and the North East Association of Directors of Public Health, to identify five priorities and three *business-as-usual* categories for improving population health within maternity services:

Five priorities

- Tobacco dependence in pregnancy
- Breastfeeding
- Perinatal mental health
- Reproductive health and safe pregnancy spacing in the postnatal period (referred to from herein as Reproductive health)
- Maternal healthy weight

Business-as-usual

- Alcohol in pregnancy
- Immunisations
- Making Every Contact Count (MECC)

Broadening from its original remit since it was first established, the Public Health Prevention in Maternity (PHPiM) programme team has also been tasked with action in the following areas to meet the needs of the LMNS: Equity analysis, equity plan, immunisations, migrant mothers, personal child health record update, poverty messaging and safe sleep. The programme, therefore, is an established package of support for professionals to deliver their care.

There is extensive prior and ongoing evaluative work in the areas of tobacco dependence in pregnancy and breastfeeding, demonstrating the value of the PHPiM programme (3,4) and its impacts on health and care outcomes, including changes to professional practice. **There remains limited intelligence on perinatal mental health, reproductive health, and maternal healthy weight; therefore, we focussed on these areas for this evaluation.**

1.1. Available evidence relating to PHPiM priority areas

At the time of the evaluation, quantitative data and data collection/reporting methods with respect to alcohol in pregnancy were still in development through the North East Commissioning Support Unit (NECS) on behalf of the PHPIM programme. Concerning immunisations, data were available as part of the Integrated Care Board (ICB) 'wider determinants' dataset. Finally, MECC is an approach used to support people in taking positive steps to improve their health and wellbeing through everyday interactions and is applied across all the priority and business as usual areas. At the time of the evaluation (April 2023-July 2024), no comprehensive data collection/reporting system was in place for MECC. All *business-as-usual* categories fall outside the scope of this evaluation given the wealth of work currently being done to embed this into routine maternity care and establish data collection/reporting systems.

Moreover, together with the PHPiM team, the evaluation team worked together with Bluegrass Research – a team of independent research professionals – to undertake a pre-evaluation stakeholder engagement activity. This involved surveying maternity services providers across community and acute sectors – to better understand provider knowledge of PHPiM and identify areas of good practice as well as improvement. Findings from the stakeholder engagement activity informed the development of the qualitative element of the proposed evaluation. Specifically, to explore areas that were less well-understood (e.g., reproductive health/safe pregnancy spacing), as well as explore areas of best practice (e.g., perinatal mental health).

2. Evaluation aims

1) To explore the impact of the PHPiM on health and care practice and outcomes, specifically within perinatal mental health, reproductive health, and maternal healthy weight;
2) To explore the impact of the PHPiM on health and healthcare inequalities and reducing service/practice variation across the NENC Local Maternity and Neonatal System (LMNS).

3. Methods and Data Analysis

This was a multi-method evaluation, consisting of three phases: Documentary analysis, secondary data analysis and qualitative interviews (with professionals/providers and parents). Each will be discussed in turn.

3.1. Document Analysis

3.1.1. Objective

To describe the implementation policy context using existing documents/policies.

3.1.2. Methods

Relevant documents were sourced including, but not limited to, local policies across the NENC, implementation plans, and protocols concerning the delivery of the PHPiM through our partners in the LMNS. National-level policy is publicly available and was used to inform analysis of regional/local policy (e.g., NHS Long Term Plan). Existing reports from prior and ongoing evaluations also informed this document analysis. These documents provided the background or contextual information needed to understand the implementation setting for PHPiM. Data were analysed using thematic analysis, in line with known methods (5).

3.1.2.1. Data selection and extraction

We identified documents through the PHPiM team between April to July 2023. We developed a document title and screening tool to identify basic information about the documents (e.g., title, author and date of publication, aim/purpose of document). Documents that were identified included official policies and strategies, reports, implementation documents, screening tools, resource documents, presentations standard operating procedure documents, among other sources.

The documents were screened by three researchers independently against the inclusion/exclusion criteria (Table 1). Conflicts were resolved through discussion with a senior member of the research team.

Table 1. Eligibility criteria

Include	Exclude
• PHPiM programme produced documents including guidelines, policy documents, training materials, references, reports • PHPiM documents focused on perinatal mental health, reproductive health, and maternal height weight	• Non PHPiM programme documents • PHPiM documents focused on topics outside the scope of the evaluation (i.e., alcohol in pregnancy, tobacco dependence in pregnancy, breastfeeding, immunisation)
• Documents published between April 2021-July 2023	• Documents published before April 2021
• Documents from NICE, LMNS, ICS, GOV.uk, in relation to the topics above	• Journal articles and other related publications

3.1.2.2. Analysis

We used a document analysis approach to explore how the PHPiM is implemented in the NENC. This approach allowed us to extract information, derive insights, and draw conclusions from written or textual data. We applied the Ready materials, Extract data, Analyse data, and Distil findings (READ) approach which presents a systematic approach for document analysis in health policy research (6). This involves: preparing required materials in relation to the scope of the research question (Table 1); extracting data e.g., through tabulation; analysing data (5) and distilling findings into coherent prose.

3.2. Analysis of secondary data

3.2.1. Objective

To assess the impact of the PHPiM on a range of maternity-related health and care practice and outcomes.

3.2.2. Methods

We used a non-randomised observational design to evaluate the impacts of PHPiM on outcomes (7). Routinely collected, aggregate data from NECS were analysed to assess the impact of the programme on a range of health and care practice and outcomes over a 10-month period, from April 2023. Where possible, we also extracted aggregate data reported prior to the implementation of the programme, and data reported during the implementation of the programme but prior to this evaluation being underway. To explore health inequalities, we obtained data on Indices of Multiple Deprivation (IMD) and ethnicity where possible; in some cases, available data are grouped by Integrated Care Partnerships. Table 2 outlines the three areas of focus for the evaluation and currently available data.

Table 2. Priority areas and evaluation streams with available aggregate data

Priority	Data variables
Perinatal mental health	• Proportion of women with a diagnosis of anxiety or depression • Rates of referral to perinatal mental health services
Reproductive health and safe pregnancy spacing in the postnatal period	• Time from completed pregnancy (including still and live births) to a subsequent pregnancy (i.e., interpregnancy spacing, data are reported in 12-month periods) • Proportion of people who have had an abortion • Long-acting reversible contraception (LARC) prescriptions • Uptake of folic acid • Healthy start vouchers
Maternal healthy weight	• Number of women with of Body Mass Index (BMI) recorded • Number of women in each BMI category at booking (i.e., broken down by the following: <30, =30-39.99, >40)

3.2.3. Analysis

Using aggregate data, descriptive statistics are reported (i.e., frequencies, percentages) for each of the outcomes identified.

3.3. Qualitative Interviews

3.3.1. Objective

To explore the planning and implementation of the PHPiM from the perspective of providers and parents.

3.3.2. Methods

We conducted one-to-one interviews with two groups: parents and providers. Interviews were geared toward understanding implementation successes and failures, exploring strategies to tackle implementation problems, and identifying recommendations for future iterations of this programme. This included exploration of public health prevention practice in relation to the three key areas of focus (i.e., perinatal mental health, reproductive health and maternal healthy weight) including factors that support or hinder practice change (e.g., governance, knowledge/training of public health prevention in maternity) and access to care/services. We also explored parents' experiences of these elements of the programme, to identify areas of good practice, areas of need as well as the barriers and enablers to care.

Ethical approval as granted by Newcastle University's Ethics Committee (Ref: 2584/32674).

3.3.2.1. Participant sampling and recruitment: Parents

Approximately 30[2] parents from a range of backgrounds (e.g., socioeconomic status, education, gender), living in the NENC were recruited to participate in one-off interviews (remote i.e., over telephone or Teams, or face-to-face, as aligned with local/regional public health guidelines). Inclusion criteria included parents who had given birth in NENC since

2021 (including those currently pregnant at point of interview). In-person interviews were conducted on University premises, and parents were provided support to minimise barriers to attendance/participation (e.g., covering reasonable travel/childcare costs). Recruitment was supported by colleagues at the ICB, ICS, LMNS, as well as relevant parent groups and organisations (e.g., Maternity Voices Partnership, HAREF Network), and used purposive and snowball approaches. Participation was voluntary; those who expressed interest in taking part were provided an information sheet and completed a consent form or recorded verbal consent prior to participation. Demographic information such as gender, ethnicity, occupation, parity, year(s) of birth/care access, and location of birth/care access, was also collected.

3.3.2.2. Participant sampling and recruitment: Providers

Providers were purposively recruited to participate in one-off interviews (remote or face-to-face, as aligned with local/regional public health guidelines). We aimed to recruit approximately 30[2] staff across Children and Young People Commissioners, Midwifery, NHS Consultants in Public Health, Health Visiting teams, other commissioned services, Researchers, Universities (undergraduate programmes), and Maternity Voices Partnership to obtain a range of perspectives. Eligible participants were approached through key contacts across these groups and were asked to contact a member of the research team to register interest. Non-responders and non-attendees were sent a reminder up to three times after the initial contact.

Participation was voluntary; those who expressed interest in taking part were asked to read the information sheet and complete a consent form or provide recorded verbal or written consent prior to the interview taking place.

3.3.3. Data Analysis

Interview data were analysed thematically using established methods (5). This involved a six-phase analytical process consisting of data familiarisation, coding, generating themes, reviewing themes, defining and naming themes, and writing up the final report. This was led by a member of the evaluation team (CT). To establish rigour and trustworthiness in this analysis, senior members of the evaluation team contributed to data coding to generate a shared understanding of preliminary codes and their meanings or definitions (RA). Themes were co-developed by the evaluation team through regular meetings.

3.4. Synthesis

Each source of data used to explore the impact of the PHPiM on health and care inequalities, including changes to professional practice, was analysed independently of each other, and then subsequently triangulated (i.e., identifying key findings from each dataset and interrogating whether these findings either converge, complement or diverge from each other). A matrix of the key findings was then developed to explore the relationships between the different datasets, and these are summarised, in line with known methods (8).

[2] Sampling was dependent on information power, which was guided by our iterative approach to data analysis

4. Findings

4.1. Document Analysis

We identified 58 documents through our searches. Of these, 26 were included in the analysis. The selection process is detailed in Figure 1.

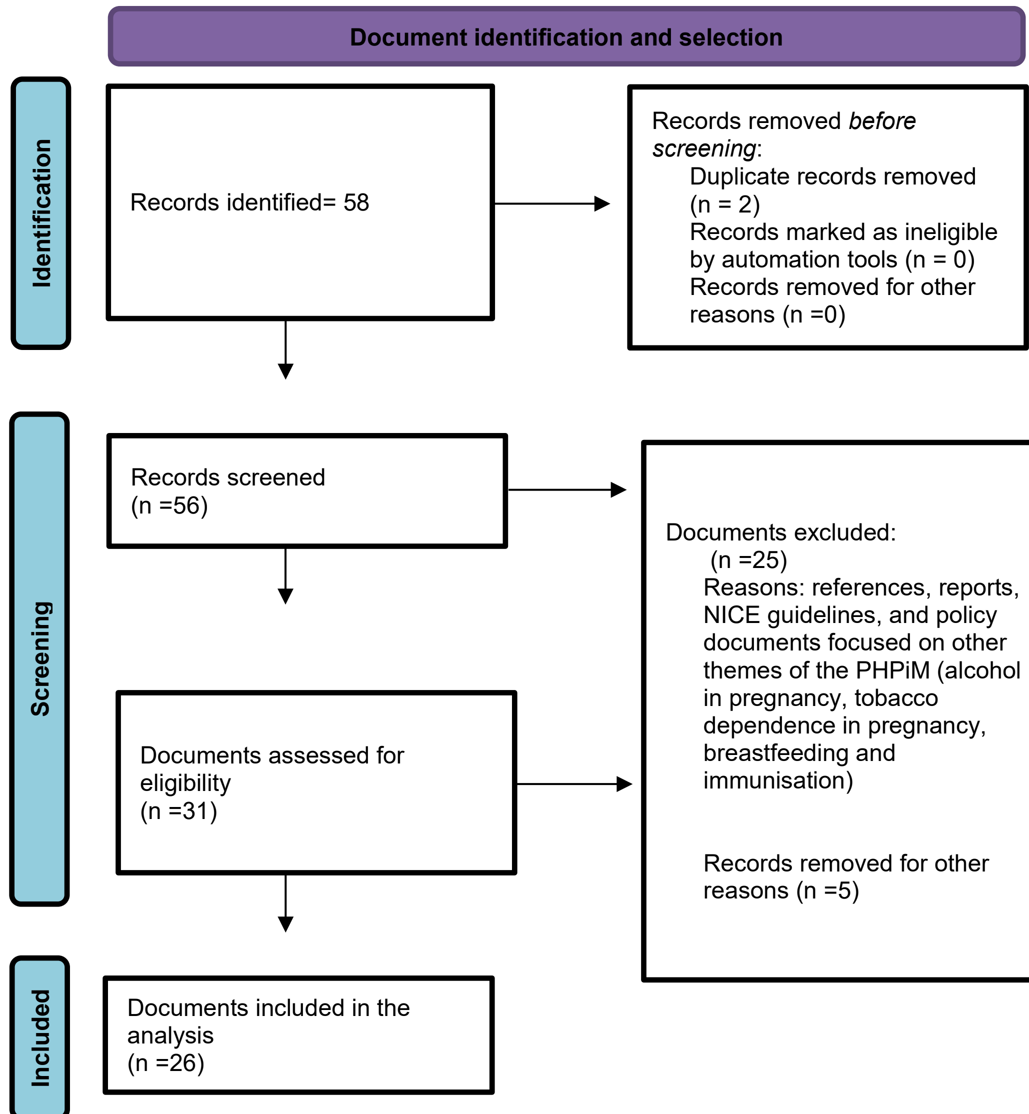

Figure 1. Document selection flowchart.

4.1.1. Document characteristics

Documents were geared towards either professionals/providers, parents, or both.

There were seven **implementation documents** which were for professionals/providers. Of these, two were published in 2021, one in 2022, two in 2023 and two did not have publication dates. These documents were published by:

1. North East and North Cumbria Local Maternity and Neonatal System
2. Integrated Care System – Local Maternity and Neonatal System
3. North East North and Cumbria Integrated Care System

4. North East North and Cumbria Integrated Care System – Public Health Prevention in Maternity Programme

These implementation documents were designed in response to other publications relating to maternal and child health. For example, the Local Maternity Systems Healthy Weight in Pregnancy, the early postnatal period audit report (2019), The Equity and Equality Guidance for Local Maternity and Neonatal systems (2021), the Marmot Review, National Maternity Safety Strategy, MBBRACE-UK reports (2019-2021), NHS people plan, UK Obstetrics Surveillance system (UKOSS) study, the National Maternity Review (2016), PHE Maternity High Impact Areas (2020), Office of Health Improvement and Disparities, Maternal and Child Health Data (2022).

The **documents for parents** included four easy read documents focused on contraception, specifically on the implant and condoms as well as planning a pregnancy.

4.1.2. Key information from documents

The **implementation documents** (n=7) were targeted towards health professionals to improve best practices in the key thematic areas of the PHPiM under evaluation. Documents also served as a training guide for health professionals, maternity staff and others working in maternal and child health. For example, documents outlined pathways for assessing or examining perinatal mental health, steps that can be taken and best practices to support those identified with perinatal mental health issues. Five of the seven documents contained information on best practices and support pathways for maternal healthy weight; these included information on how to communicate risk around excess weight gain in pregnancy, and interventions for women with overweight and obesity. Three of these five documents also contained information on reproductive health and safe pregnancy spacing. One of the documents, while focussed on alcohol consumption in pregnancy, also had content relating to perinatal mental health and reproductive health. Finally, the Equity and Equality Action Plan (2022) published by the NENC-LMNS was targeted towards a broader group of stakeholders, which included local authorities. While focussed on strategies for enhancing maternal and neonatal health equity, particularly for those in deprived areas and from minoritised ethnicities, it also covered examples of how to achieve equity in the three topics under evaluation. For example, it outlines a set of actions to for maternal healthy weight and planning for pregnancy, with clear timelines and identified groups/professionals responsible for completing these actions.

The **easy-read documents for parents** (n= 4) provided visual presentations to help women make decisions on the type of contraception they could access after having a baby. Three of these were local to one Trust. One of the documents provided information about planning a pregnancy and had information on time between pregnancies, folic acid, smoking, healthy weight and physical activity, contraception, and alcohol in pregnancy.

Screening/assessment tools, standard operating procedures and templates (n= 12) included alcohol screening and perinatal mental health screening tools. More than half of these can be used with women (n= 7). There were questionnaires which focussed primarily on mental health (two specific to postnatal mental health, two specific to perinatal mental health and two on mental health issues across pregnancy more broadly). There were also

two questionnaires for use at the 6-8 week review, which covered postnatal mental health, postnatal contraception, as well as maternal healthy weight. The alcohol screening tool not only focussed on alcohol in pregnancy but also offered guidance on how to complete the alcohol pathway form, use the AUDIT-C, and assess mental health and reproductive health. Finally, there was a standard operating procedure document, care at the point of discharge, targeted at healthcare professionals. A flowchart on the processes when handing over to another service is described in this document. It describes the pathway for contraception and healthy weight.

Finally, there were three **documents for professionals and other stakeholders** (two presentations, one report) providing an update on the PHPiM. The presentation slides were similar and were designed for two different audiences: one was midwifery students at a university in the region, and the other version for GPs, health professionals and local authorities. These documents provide actions from March 2021 to April 2023 covering the core themes of the PHPiM. The presentation for student midwives included information on maternal healthy weight, reproductive health including improvements to contraception, as well as information on the 6-8 week check performed by GPs which included a postnatal maternal health review. The presentation for post-qualification professionals and local authorities included similar information but also included information on training for contraception available to midwives and health visitors, as well as feedback from women on postnatal care (e.g., importance of not being rushed, feeling safe). Finally, there was a scoping report published in 2022, which outlined the provision of postnatal care. It drew information from the NICE postnatal guidance (2021), the NHS Long Term Plan (2019), Healthy Child Programme (2021), Public Health England's 2020 Maternity Impact Areas.

In conclusion, there was a broad range of resources available for use across the region in relation to public health prevention in maternity. These resources were targeted at different audiences, and were informed by relevant contemporary evidence and guidance. We analysed resources that were available for women and parents; however these did not include any resources that were produced by other organisations/groups, with support from PHPiM. Our analysis was limited to those that have been produced by the PHPiM team.

4.2. Secondary data analysis

4.2.1. Demographic profile of mothers, 2021-2023

There were 61,578 booking appointments recorded in the region between 2021/22-2022/23, an increase of 9% from 2019/20-2020/21. Of these, 13,644 bookings were from the most deprived areas (i.e., IMD score of 1), and 2,585 from the least deprived areas (i.e., IMD score of 10). Bookings from the most deprived areas comprise 22% of all bookings in the period 2021/22-2022/23. The majority of bookings in this period were with White women (n= 51,508), with 5,338 being from either Asian, Black or Mixed ethnicities.

Data in the following sections are presented as follows: Perinatal mental health, reproductive health, and maternal healthy weight.

4.2.2. Perinatal mental health

Proportion of women with a diagnosis of anxiety or depression

As of October 2023, it was identified that almost 4 in 10 (37.3%) pregnant women in the region had a diagnosis of anxiety or depression, as indicated in their primary care clinical record. There were no data that were available to us for analysis on perinatal mental health diagnoses by ethnicity or IMD. There were also no data available to us for analysis relating to diagnoses of anxiety or depression (indicated in primary care clinical records) before the implementation period as a comparator.

Rates of referral to perinatal mental health services

In 2020/21, there were 604 referrals to talking therapies. In 2021/22, this rose to 1179 referrals and again in 2022/23 (1737 referrals) and in 2023/24 (2985 referrals). Between 2020/21 and 2021/22, the majority of referrals were made by mothers themselves (i.e., self-referrals) averaging at 77.6%. Referrals from primary care averaged 13.3%. Between 2022/23 and 2023/24, self-referrals decreased to an average of 65.2% with referrals from primary care increasing by 6.5 percentage to 19.8%.

The majority of referrals were for individuals living in the most deprived areas (IMD scores 1-4): 441 (73.01%) in 2020/21; 866 (73.45%) in 2021/22; 1223 (70.41%) in 2022/23 and 2046 (68.54%) in 2023/24.

In terms of accessing treatment, in 2020/21, 410 individuals accessed treatment within 28 days of referral (67.8% of referrals). In 2021/22 926 individuals accessed treatment (78.54%) and 1267 in 2022/23 (72.94%). Most recently in 2023/24, 2198 individuals accessed treatment (73.63%). This shows that there has been an increase in access to treatment from 2020/21, with an average of 75% of those referred accessing treatment within 28 days of referral between 2021/22-2023/24.

4.2.3. Reproductive health and safe pregnancy spacing in the postnatal period

Birth to booking spacing

Four-year cumulative data were available to us for analysis. Concerning the time from completed pregnancy (including still and live births) to a subsequent pregnancy (i.e., interpregnancy spacing, 12-months), we observed an increase in the average time in days from birth to booking as seen in data from 21,052 bookings (Table 3):

Table 3. Average birth to booking (in days), 2020-2023

Year	Average Birth to Booking for subsequent pregnancy (in days)	Total Bookings
2020	308.9	1,814
2021	474.4	4,485
2022	613.2	6,906
2023	721.6	7,847

We were unable to stratify these data by ethnicity or IMD.

Proportion of people who have had an abortion

Using national level data (9), in 2022 there were 239,926 legal abortions in England, of which 11,217 (5%) were in the North East and North Cumbria Integrated Care Board. We observed a 30% increase in legal abortions when compared to the year prior (8,629). These data should be interpreted with caution, given the difference in categorisation of the region in the two data collection years (2022 – 'North East and North Cumbria Integrated Care Board' vs 2021 – 'North East'), which might reflect differences in the catchment populations and denominators. However, the increasing trend is reflects national level statistics from 2021 (10). We were unable to stratify these data by ethnicity or IMD.

Long-acting reversible contraception (LARC) prescriptions

Using national level data (10), LARC prescriptions are declining (44.1 per 1,000) in the region. Regional-level data were not available for us to analyse.

Healthy start vouchers

Between August 2021 and March 2022, there were, on average, 31,575 eligible beneficiaries of healthy start vouchers. The average uptake of these vouchers over this period was 71%. Between January and December 2023, there were, on average, 31,546 eligible beneficiaries of healthy start vouchers. The average uptake of these vouchers over this period was 72%.

4.2.4. Maternal healthy weight

Number of women with of Body Mass Index (BMI) recorded

There were no data available to us for analysis on the number of women with their BMIs recorded at the time of booking from 2021/22-2022/23. However, it was reported that between January to March 2023, 71% of bookings have had BMI recorded.

In 2023/24, however, it was reported by the North of England Commissioning Support Unit that all Trusts in the North East and North Cumbria have recorded the BMI of women at 15 weeks (within 'at risk' BMI groups, i.e., overweight, obese or severely obese). It was identified that 59.3% of women at 15 weeks' gestation fell into one of these categories, higher than the English average (54.9%).

Number of women in each BMI category at booking (i.e., <30, =30-39.99, >40)

Using nationally available data (Public Health England Fingertips), it was estimated that in 2018/19, more than 1 in 4 (27.4%) women at the early stages of pregnancy in the North East lived with obesity. This is higher than the English average of just over 1 in 5 (22.1%). There were no data available to us on prevalence estimates for the years spanning the PHPiM implementation period.

However, using regional aggregate data form April 2018-March 2023, there were 34,043 unique women with at least one pregnancy booking and BMI recorded. Of these, over half had a BMI <30 (n= 18,741), almost a third had a BMI between 30-39.9 or were considered as having overweight (n= 10,834), and 13% had a BMI >40. We were unable to disaggregate the data to group these booking numbers from 2021/22-2022/23.

Gestational diabetes mellitus (GDM) diagnoses

Of the 61,578 bookings in 2021/22-2022/23, 2,357 women were identified with GDM (3.83% of bookings). This is an increase on 2019/20-2020/21 figures (n= 1,192 of 56,515 or 2.10% of bookings) by 1.72 percentage points.

4.3. Interviews

4.3.1. Participant Demographics: Providers

A total of 18 interviews were conducted with programme providers and healthcare professionals. Participants' age ranged from 27 to 63 years (*M* = 46.06, *Mdn* = 44.50, *SD* = 9.43). A breakdown of sample demographics including gender, ethnicity, occupation, year(s) in role and location based can be viewed in Table 4.

Table 4. Demographic Characteristics: Interviews with Providers/Professionals (N= 18).

Demographic		N (%)
Gender	Male	1 (5.56%)
	Female	17 (94.44%)
Ethnicity	White – British	18 (100%)
Job Role	Consultant (Obstetrician)	1 (5.56%)
	Public Health Practitioner	2 (11.11%)
	Midwife/Community Midwife/ Health Visitor/ Nurse	10 (55.55%)
	Clinical Matron/ Clinical Lead/ Nurse Manager	3 (16.67%)
	Care Co-ordinator	1 (5.56%)
	Commissioning Support Officer	1 (5.56%)
Year(s) in Role	0-5	8 (44.44%)
	5+	10 (55.56%)
Locality	Newcastle	1 (5.56%)
	Gateshead	3 16.67%)
	South Tyneside	4 (22.22%)
	South Tees	4 (22.22%)
	Tees Valley	1 (5.56%)
	County Durham	1 (5.56%)
	North Tyneside	1 (5.56%)
	Northumbria	1 (5.56%)
	North Cumbria	2 (11.11%)

4.3.2. Participant Demographics: Parents

A total of 31 interviews were conducted with mums, with all participants reporting as Female. Participants' age ranged from 23 to 43 years (*M* = 33.87, *Mdn* = 33, *SD* = 4.43). A breakdown of sample demographics including ethnicity, occupation, parity, year of birth(s), and region of care access can be viewed in Table 5.

Table 5. Participant Demographic Information: Parent Interviews (N=32).

Demographic characteristic		*N* (%)
Ethnicity	White British	24 (77.42%)
	White European	2 (6.45%)
	Black British	(3.23%)
	Asian or Asian British	4 (12.90%)
Occupation[3]	Higher managerial, administrative, and professional occupations	24 (77.42%)
	Lower managerial, administrative, and professional occupations	3 (9.68%)
	Small employers and own account workers	2 (6.45%)
	Never worked and long-term unemployed	2 (6.45%)
Parity[4]	Currently pregnant (at point of interview)	
	1	14 (45.16%)
	2	13 (41.94%)
	3	3 (9.68%)
Year of Birth(s)[5]	2021	7 (22.58%)
	2022	7 (22.58%)
	2023	11 (35.48%)
	2024 (incl. pregnant at point of interview)	2 (6.45%)
	2021 and 2023 (2 births)	4 (12.90%)
Maternity Care Accessed (by region)[5]	Newcastle	12 (38.71%)
	North Tyneside	8 (25.81%)
	Stockton-on-Tees	2 (6.45%)
	County Durham and Darlington	2 (6.45%)
	Gateshead	2 (6.45%)
	South Tyneside/Sunderland	3 (9.68%)
	Northumberland	(3.23%)
	North Cumbria	(3.23%)

The following sections outline the themes identified from the analysis of interviews with providers with parents. Each will be discussed in turn, and anonymised direct quotes (with participant IDs) will be used to expand on or illustrate themes.

4.3.3. Themes: Interviews with Providers

Themes which were identified from providers' perspectives fell under three overarching categories relating to PHPiM as a strategic agenda, the implementation of PHPiM, and the impact of PHPiM. **Four main themes** were developed**: Programme Strengths, PHPiM Implementation Strengths, Challenges with Programme Implementation,** and **the**

[3] Note: Occupations as defined by eight categories of The National Statistics Socio-economic classification (NS-SEC), from the Office for National Statistics (11).
[4] Parity is defined here as number of pregnancies carried to full-term, not inclusive of child loss.
[5] Year of birth(s) which occurred within the remit of the PHPiM roll out i.e.., 2021-current).
[5]Note: Region of care accessed may differ from place of birth.

Impact of PHPiM on Practice and Care Delivery. Themes and subthemes are discussed below, with illustrative quotes from participants provided, with participants referred to as P001, P002 etc., along with their job roles.

Theme 1: Programme Strengths.

This theme and subsequent subthemes relate to the strengths of PHPiM as a programme i.e., as a strategy and agenda, from the perspective of providers and healthcare professionals.

Subtheme 1: Commitment/buy in to the prevention agenda.

Providers reported key motivations for delivering the prevention agenda, including reducing health inequalities, improving overall health outcomes, improving breastfeeding rates, and overall working towards the early prevention of adverse health outcomes across the lifespan. This motivation and commitment to the agenda was shared across providers, demonstrating a key strength of the programme itself, and represents the reach of programme goals. Many were familiar with the programme and its initiatives, but even for those less familiar (e.g., by name), the underlying agenda was understood and appreciated, and work towards meeting goals across the outcomes of mental health, maternal healthy weight and safe pregnancy spacing was reported across job roles.

> *"I think public health is a thread that runs through every part of maternity. And we are seeing women more and more with complex social needs, with huge health inequalities. So I think the programme is very much focused towards reducing health inequalities, which every midwife should be motivated to provide that care."* (P002, Midwife).

> *"An appreciation of health outcomes that the PHPiM has been really focussed on or health outcomes that, actually, we should all be focused on in our roles as public health. Just by knowing it, raises it on your own agenda."* (P016, Nurse Manager).

Subtheme 2: Facilitating collaboration between NHS and local authority across NENC (shared learning).

The programme was also recognised for being instrumental in bridging collaboration between maternity services offered both by NHS and local authority (LA) across the NENC. For example, through creating key networks and collaboration with relevant contacts across the region, providers reported being able to learn from other trusts and LAs on what works well and how to improve services, to facilitate improvements within their own services and vice versa. Shared learning, through established networks, was reported as being key to ensuring cohesiveness and effectiveness of maternity services provided across the region, e.g., the development of infant feeding pathways.

> *"I'll give you an example, for breastfeeding, is the Touchpoint Pathway that's produced by the programme, we've used to map services in [Region 1] against, so you can use it as, like, best practice and if, and you know they've already done the work for you with regards to what's the guidelines nationally, you know, so if you've got that document and you're mapping,*

so we could do a patient journey for example, and then see whether or not it maps against the Touchpoint Pathway that's recommended, you know that you're making your services more equitable, because the thing about [Region 1] is, is that our residents cross over different trusts." (P008, Public Health Practitioner).

"Yeah, it was just developing, so we had, again we already had a mental health algorithm that, you know, would signpost us where to refer patients to, so it was looking at that at a regional level, again streamlining that, making sure that everybody was doing the same thing, everybody had access to the same thing, everybody was able to refer for the same, everybody had access to the same sort of services." (P006, Clinical Matron).

Theme 2: PHPiM Implementation Strengths.

This theme and subsequent subthemes represent reported enablers related to the implementation of services under PHPiM, i.e., services related to the outcomes of perinatal mental health, maternal healthy weight, and safe pregnancy spacing/postnatal contraception.

Subtheme 1: The programme as a guide for focus.

Following on from the responses around a shared commitment to the prevention agenda under Theme 1 - Subtheme 1, participants reported that the programme provided healthcare professionals and providers an important guide as to where to focus efforts regarding the implementation of PHPiM. Having set agendas and outcome targets, as guided by PHPiM, was seen as a key strength of the programme thereby enabling service development and delivery. Also, the fact that this agenda was being led on the ground e.g., by Public Health midwives and other specialist leads (e.g., for mental health and healthy weight), was particularly useful for driving service delivery, as staff were made aware of priorities through these connections and were clear on who to approach for support and guidance. Leadership and guidance, both from programme leads and specialist frontline leads, were reported as being instrumental in focusing efforts, supporting service delivery, and ultimately achieving outcomes (e.g., awareness and availability of services for referral to, access and support train staff, etc.).

"I definitely think having a programme, there, to work towards is a positive thing…I think having a framework for the public health midwife, for the midwives on the floor, to understand these are the areas we're working towards…Make sure that public health is something that's thought about across the board, rather than just at a management level or just at a specialist midwife level. By getting the staff involved and making sure that even if they don't know the name of the programme, they understand the areas that we're working in, it gives them the opportunity to be like, hang on. Either I've worked somewhere else and this is what they did or I've got an idea, can we, maybe, try it out and that's encouraging the from their level to start thinking more from an umbrella viewpoint" (P009, Midwife).

Subtheme 2: Staff commitment and engagement.

Staff commitment and engagement e.g., through receiving appropriate training or by recognising the importance of the prevention agenda, also was reported as a key enabler of PHPiM implementation. For example, responses reported staff engagement with training, such as the training offered around mental health discussions/postnatal contraception, was a key enabler to delivery i.e., staff being able to feel more comfortable asking the right questions, feeling empowered to offer women postnatal contraception or the having the knowledge to make referrals to appropriate services where necessary.

> *"I feel much more comfortable about contraception now I've done this, like, course in contraception, so I feel like I can have a more meaningful discussion with people about contraception and I have more answers. And I think, yeah potentially mental health has become a little bit easier because there's more a focus on it from the, like management structure, and they've kind of employed pathways for us to refer women and things that we can do for women so that has become easier*." (P012, Midwife).

Theme 3: Challenges with Programme Implementation.

This theme and subsequent subthemes relate to the challenges associated with the programme implementation e.g., evidencing outcomes, and navigating commissioning for services to meet demands.

Subtheme 1: Evidencing medium/long-term outcomes.

A challenge reported by healthcare professionals and programme providers related to difficulties associated with tracking outcomes from programme actions, particularly long-term outcomes. This was partially attributed to the fact that healthcare professionals, specifically midwives or obstetricians, are with women for a limited period. Therefore, any referrals made to services, e.g., for healthy weight during pregnancy, cannot be tracked for long-term outcomes, i.e., beyond the pregnancy. This can be particularly true if barriers exist to accessing healthy weight services following birth (e.g., making GP appointments or discussing a sensitive topic). Similar challenges were reported for mental health outcomes, with participants encountering difficulties around measuring the long-term impact of services for perinatal mental health, particularly as mental health and improvements in mental well-being can be a difficult construct to define and can vary across individuals.

> *"So I think that clinic works quite well. So we get referrals in from community, so all ladies who have a BMI above 40 are referred in and I would say of the women that are referred in… at least 90% of the women who are referred in come to the clinic...However, it's what happens after that that we don't know… If she wants to take up the community offer from her GP she has to approach the GP and say, "I know that I can be part of this service, please refer me." For me the GP should just automatically pick that up…and it's making the woman remember. So six weeks postnatal she isn't going to remember, "Oh yeah I must tell the GP that I want to be part of the community dietetics service." That's the last thing on her mind when she's got a new baby… and it is a sensitive subject... So if you are a larger lady with a BMI above 40 you might be too embarrassed to start that conversation."* (P013, Midwife).

“Mental health, it’s harder because it’s so grey scale, and it is very complex with all of your different factors that can lead to mental health illness, that I think it’s a lot more difficult to show progress… it’s not, like, the same person can be experiencing exactly the same situation, like, two people can be experiencing the same situation and it can impact on people completely differently. So yeah, you’ve got your PHQ-9s and your GAD-7s that you can use for baseline, but even So it’s very [subjective]”. (P009, Midwife).

Subtheme 2: Mismatch between resource and service demand.

Participants identified challenges associated with funding, particularly differences in commissioning for services that differed across trusts/LAs across the NENC, which led to challenges with meeting the service delivery demands of the programme. Some participants reflected on how priorities differed across the region, affecting buy-in to implementing PHPiM. This difference in local priorities have then led to barriers to implementing services i.e., lack of cohesive access to services across the region. For example, some providers reported differences in access to specialist healthy weight and mental health services. Differences in commissioning were also reported to have possibly led to certain implementation barriers, such as long waiting lists for services (e.g., mental health talking therapies) and limited availability for funding staff training (e.g., healthy weight training). Confusion over service commissioning (between LA and NHS trust, for example) also was reported as a challenge, e.g., affecting awareness of different services available for referrals under localities.

“We’ve kind of, we’ve got budgets to follow etc but I do feel that the prevention, there could be more funding in the preventative work and that would, could potentially improve outcomes because the funding isn’t there for maternity for the preventative work…because I mean the tobacco work, that is a priority and we get funding for that. We got the incentive scheme and absolutely that is, it should be a priority but I feel that the other agendas, the funding isn’t there for the other agendas.” (P007, Midwife).

“There is a little bit of, who commissions what at the moment? We're sitting there, going like, well where's that? Who's? Where's that coming from and which boundary are we sitting in line with at this point in time?... It's just utterly confusing. I think, from a staff point of view, when we were trying to say, well, where am I supposed to refer people? Where is this? Which point are we aligned to, for which area and things. It does just confuse the world a lot.” (P017, Clinical Lead).

Subtheme 3: Workforce capacity.

A challenge associated with service delivery of PHPiM was workforce capacity e.g., staffing pressures, staff engagement with training, time constraints within appointments, and other practical difficulties. For example, challenges such as accessing training for healthcare professionals to provide different forms of postnatal contraception was associated with staffing pressures i.e., limited capacity for staff to undertake training courses.

"Again, it's a major issue of capacity and workforce. I mean, the training doesn't take long to do because they're nowhere near doing anything like LARCs (Long-acting reversible contraception) in in hospitals but for general contraceptive pills the training isn't in depth training obviously it has to be a validated a training and it has to be paid for but it's not necessary a difficult thing for midwives to do… A lot of them will say that they don't have the time to do it and they're not funded." (P014, Public Health Practitioner).

"I think it's time constraints, all the things that community midwives have to do as well, you know…You've got that ten, fifteen minute appointment and there's a lot of questions, a lot of clinical things that you need to be doing. Sometimes if you might just say, "Are you feeling okay, der, der, der..." then that's it, but you're not really going in depth, but I think it's time." (P004, Midwife).

Subtheme 4: Diverse population needs.

Ensuring that services matched the demands and needs of the population was reported as a challenge. For example, some providers suggested that diverse needs such as religions, languages, cultures, and accessibility, presented barriers to engaging women and families in discussions around postnatal contraception, mental health, and healthy weight. Participants suggested the need for further training for culturally sensitive discussions with women and families around postnatal contraception, improving the accessibility of services/information e.g., developing non-digital, translated materials or working towards reducing practical barriers for parents accessing services such as reducing travel costs, and finally, improving the involvement of marginalised groups with lived experience of maternity in the development of services and materials.

"Some things like the reproductive health, the preconception information. It's very difficult for a woman who's got a lower reading age to read. It's not produced any different languages." (P002, Midwife).

"Some methods of contraception that are widely available aren't suitable for my caseload. They have to be private for them. It could be expanded to other methods of contraception that would help other caseloads, other ethnicities, other cultures and not just the white British woman that all evidence seems to be based on." (P003, Midwife).

"But I think also what we're trying to do is we're trying to listen to the service user, to get that voice so that we can know what it feels like to have accessed the services and how it feels but we're missing, we've got white British white educated women, we're missing a lot of the small minority groups that we need to hear from but it's trying to engage with them and trying to access that and get that voice. I think that's hard. That's an inequality isn't it? We can only, we can listen to a group of people but it's not going to, it's not representative of the whole community." (P005, Care Co-ordinator).

Theme 4: Impact of PHPiM on Practice and Care Delivery.

Subthemes relating to this theme reflect responses which discuss the impact of PHPiM on practice and care delivered by service providers and healthcare professionals, addressing three target outcomes: perinatal mental health, maternal healthy weight and safe pregnancy spacing (here discussed as postnatal contraception).

Subtheme 1: Perinatal Mental Health.

Respondents reported several impacts of PHPiM on the delivery of and access to perinatal mental health services, e.g., birth reflection services, more streamlined mental health support, an improved focus on strengthening parent-infant interaction support, and improved access to mental health support training for staff. PHPiM was accredited for being instrumental in improvements made in this area for practice and care delivery, but also for the work such services have done towards improving perinatal mental health outcomes.

> *"With mental health lots of work there in developing pathways like birth reflections, developing a mental health midwife role, thinking about how we access and support women with a lower level of mental health that don't quite fit into that, the severe end where they'll be picked up by perinatal mental health and thinking about working out of hubs, working out in the community is, you know, these are things that we would talk about, discuss, map and plan for to try and get the hard to reach patients."* (P006, Clinical Matron).

> *"Staff are trained now to look for cues, you know for kind of, if there's any kind of concerns, red flags kind of, there are people that we can signpost to and there are psychologists around. Mental health is a massive part of our role really."* (P005, Care Co-ordinator).

Subtheme 2: Maternal Healthy Weight

Providers discussed increased conversations around healthy weight with women and families and increased access and uptake to healthy weight-specific training for professionals and providers, attributed to the programme's work in increasing awareness of the healthy weight agenda. Furthermore, increased availability of resources and access to services for providers to refer women was reported. Further work was suggested, such as continuing to destigmatise weight conversations with women to promote stronger engagement, as this area is particularly sensitive and can lead to uncomfortable conversations both from the perspective of women and healthcare professionals. However, the creation of specialist leads and pathways for women to access were reported as key enablers for improving practice and care for maternal healthy weight.

> *"We've had families that have, the kids have been well above the 90th percentile for weight and this has, maybe, been two or three of the children who have needed support and parents have been very similar. Then we've managed to, not say dramatically change their life really, but there has been a definite improvement in diet and exercise and potential health benefits from doing it that way. We tend to work in much more of a family-focused way like that."* (P016, Nurse Manager).

"I think the hardest one is maternal weight. I think as well, it's just so difficult, anyone that's overweight knows they're overweight so it's not always helpful to have it pointed out and it's often, I think pregnancy is often a time when women don't want to be thinking about their weight because they like, "Oh well I'm going to gain weight anyway." So they're not, it's difficult to engage women." (P012, Midwife).

Subtheme 3: Postnatal Contraception (PNC)

Improvements were noted in postnatal contraception provisions because of the agendas set out by PHPiM, e.g., promoting safe pregnancy spacing. For example, many professionals and providers noted increased access to training for healthcare professionals to provide postnatal contraceptive methods to women, thus working towards removing barriers for women to access PNC, such as making appointments, accessing specialist sexual/reproductive health care, and collecting prescriptions from pharmacies. Furthermore, increased awareness of the importance of PNC in relation to the risks of rapid repeat pregnancies and safe pregnancy spacing and the prevention agenda set out by PHPiM was reported across providers, with this being demonstrated by increasing discussions and education being shared with women and families. Despite the challenges in service delivery, as discussed previously, the impact of PHPiM on the delivery of practice and care provisions for PNC, and thus the impact on uptake and overall outcomes, was reported across responses.

"We've had a big drive, in the past year, to get midwives trained and able to prescribe the pill, postnatally. I know that we're also looking at being able to train midwives and some of the doctors, in how to insert implants so that we can offer that to our women as well… Because originally, we had just been handing out condom packets when they go home so that's been really positive to see and there's been quite a lot of uptake from our women so that's been really nice." (P011, Midwife).

"Reproductive health, my role is very much to ensure, well, encourage GP attendance for six to eight week review post-birth. That's certainly when contraception might be discussed with the GP, as I'm sure you're aware. I'd also have a conversation about contraception prior to that." (P018, Health Visitor).

4.3.4. Themes: Interviews with Parents

Factors which facilitate the delivery of the PHPiM (e.g., in routine care) emerged as a main theme across interview responses, along with themes relating specifically under the three main public health outcomes explored, **Perinatal Mental Health, Reproductive Health** and **Maternal Healthy Weight.** Themes and subthemes are discussed in detail below, with illustrative quotes provided and participants referred to as P001, P002 etc, alongside parity and year of most recent birth(s).

Theme 1: Factors in general care that facilitate the delivery of the PHPiM

This theme relates to elements of general care delivery that were seen as facilitative of delivery of the PHPiM i.e., help to promote improvements in the public health outcomes of interest and beyond. Factors included, for example, continuity of care with health visitors/midwives, which can help to promote rapport and trust building, thus making it more likely to have meaningful and open discussions, particularly around sensitive issues such as mental health, safe pregnancy spacing/postnatal contraception, and weight.

> *"I do think that having that continuity of care is, it made such a big difference to me in this pregnant, in my last pregnancy…. To have the same team of people around me from booking till discharge was really, really great, like, I could say hi to people and I've met them before, like I'm not introducing myself to a new person every time, and that benefitted me in a lot of different ways."* (P028; Parity: 2; Year of most recent birth: 2023).

Participants highlighted that involving partners in care could facilitate productive discussions around areas of interest such as family planning/contraception, as well as promoting general care experience e.g., by sharing appointment information with the partner to improve retention of information/resources and help alleviate stress and anxiety of attending appointments alone.

> *[Researcher]: "How did you find not having [your partner] come to the midwife appointments?*
>
> *[Participant]: I think it was, it was difficult because she felt like she was missing out and she wanted to be part of it in order to be excited and everything, and I think from my perspective it was difficult because then it was a bit like, it was all my responsibility to remember what to ask, to remember all the information…"(P018; Parity: 1; Year of birth 2021).*

Indeed, many participants reported a need for improving knowledge/awareness and general access to available services e.g., community groups as another important facilitating factor. Other factors were also noted as facilitating factors for the delivery of the PHPiM and perinatal care more generally, for example, general accessibility to services e.g., transport to/from appointments, timing of appointments, parking arrangements, increasing access to midwives/health visitors, and ensuring postnatal care is improved more generally such as promoting person-centred care, particularly postnatally.

> *"I asked a few times about parenting classes and things like that. And I asked my health visitor when she came out for a check before he was born and she said, "I'll send you all the leaflets and everything out in the post" and she never did. And then I asked my midwife on one of the appointments and she said, "They're at this time at this place" but she didn't have anything to give us to, so I had written down sort of thing. I think that information needs to be able to be more accessed easily…you go online and you try and find it and you get thrown*

here, there and everywhere. It's not clear at all. And especially when I'd asked my midwife and she was like I'm sure there's a class at the Children's Centre and then when I rang them they didn't do it anymore. Well, where does that leave us? I'm now stuck because she didn't have the correct information." (P026; Parity: 1; Year of birth: 2024).

Theme 2: Perinatal mental health outcomes

Subtheme 1: Barriers affecting access to mental health support

This subtheme represents factors in general care experiences that participants saw as potential barriers to accessing perinatal mental health support. Factors reported include lack of regular mental health check-ins/signposting to potential services during the antenatal period, which was reported to have affected access to mental health support during this time, despite a potential need for this support being reported. Participants reported they felt that their physical care was prioritised throughout the perinatal period, possibly resulting in reduced mental health discussions or concerns raised.

"Realistically this pregnancy was harder physically and mentally than the last one. And my physical health was definitely prioritised more than my mental health which on reflection now probably wasn't right but you don't know because the physical could go downhill in the blink of an eye and then we're really up shits creek. They do have to be all over the physical. But I do feel the mental health definitely takes a second seat there." (P005; Parity: 2; Year of most recent birth: 2023).

Moreover, participants felt that there was a general expectation of mums and parents to be responsible for raising mental health concerns, which was a barrier to accessing/being signposted to appropriate support:

"Maybe because I'd been a mum before they must have thought I know what I'm doing, I'll call for help if I need help…They were really great once I sought out the help but then I just thought at one point I thought, if somebody didn't have that courage to speak out and they weren't being regularly visited they might have just been left to it… I think once I was able to seek out a little bit of help, I got the help but it was just the feeling of being left to it and I have to look for help if I want help kind of thing." (P015; Parity: 3; Years of most recent births: 2021, 2023[6]).

Participants also reported the importance of healthcare professionals' attitudes, for example around taking mental health medication during pregnancy, and mental health concerns raised in how discussions progress (or regress). In particular, the way in which discussions are framed can be barriers for accessing suitable support for mental health concerns during pregnancy. General accessibility issues such as long-waiting lists to talking therapies, current services not being suited to needs (e.g., ME/CFS), and general difficulties with reaching out for support, can hinder people from accessing support.

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[6] Note: some participants discussed up to two birth/pregnancy experiences which fell under the inclusion criteria and remit of PHPiM roll out (i.e., 2021-current).

"And they were like we have information about services, shelter services and just postnatal services that you can use if you need one, we are here to help you with that. Although I can say that sometimes people who find themselves in a place where they need these services don't exactly feel like or are not exactly in a place to go out and get this help. They're in a place that help should rather come to them but I really appreciate the way they were able to put out that information and I'm aware that there are services for even post birth." (P030; Parity 1; Year of birth: 2023).

Subtheme 2: What has worked to overcome barriers/improve access and experience of support.

Factors which were seen as promoting mental health outcomes/the PHPiM agenda were identified. For example, many participants reported receiving clear signposting to appropriate services for support either for specifically their mental health e.g., IAPT services/talking helps therapies, or to other appropriate services for support with issues which were impacting upon mental health e.g., to infant feeding support services, birth reflection services or community services such as mum and baby groups.

"Yeah, definitely, yeah, so she gave me a number, she gave me I think it's called Crisis where the baby keeps crying lots and lots, she gave me like the counsellor number as well, she just gave me so many different contacts and emails, and then on Facebook as well she gave me different mum support groups and different places I could go to." (P022; Parity: 1; Year of birth: 2023).

Signposting to support of these kinds was seen as an important factor for facilitating positive mental well-being improvements and preventing ill-mental health in the postnatal period and beyond.

Furthermore, having regular and thorough checks both antenatally and postnatally by healthcare professionals, particularly professionals with whom a rapport was built e.g., a regular midwife, health visitor or GP, was another important facilitator for accessing mental health support. Checks which were framed as an open and honest discussion, rather than as part of a "checklist", were seen as the most productive way of facilitating mental health discussions, making concerns easier to raise. Also as touched upon in previous themes, involving partners in mental health discussions, along with general healthcare professionals' attitudes towards mental health support e.g., medication during pregnancy for mental health where suitable, were seen as important factors for facilitating access to support.

"I think maybe it's just actually somebody who genuinely looks like they want to listen to you rather than they're just like sitting with their ticky box paper. Them actually sitting and talking to you and asking you questions rather than reading from a sheet. And I think generally just talking to somebody who's quite a friendly person and who is quite chatty and I think that makes you want to chat a bit more if they're quite chatty because you've got to feel at ease really don't you, because it's quite a difficult discussion." (P020; Parity:1; Year of birth: 2022).

"I had tried some anti-depressants in that year that was really tough but they didn't agree with me at all so I knew I didn't want those. My GP immediately gave me one other one and that worked really well. And yeah, that was just never ever an issue at all and I do, I did really appreciate the sort of approach that sure there are risks to the baby with taking anti-depressants but it's a bigger risk having a depressed momma." (P010; Parity: 2; Year of most recent birth: 2023).

Subtheme 3: Suggestions for overcoming barriers and improving mental health outcomes

Participants identified areas for improvement to overcome existing barriers to accessing mental health support and to continue improving mental health outcomes. Many participants reported that a potential gap in which postnatal mental health concerns may be difficult to raise or could be missed, is in the period following the 6–8-week GP check, where regular contact reduces. Participants suggested the benefit of being offered opportunity to discuss mental health concerns during longer-term, routine follow-up appointments, for example in the 1-year review carried out by an appropriate healthcare professional.

"I do think that I don't know if it's just my experience, but my, the people asked a lot about my mental health early on and then didn't later on and it kind of, it just kind of gets forgotten about almost. It's like within the first six months people ask lots of questions and after that it's just sort of like well you're coping. But actually, I think it might go on a lot longer than that and yeah. Maybe more, because it sort of, it's like mum and baby to start off with but then as the little one gets older it's much more focussed about the little one but actually potentially checking in on maternal parental mental health later on might be just, I don't know the one year appointment as well might be important." (P004; Parity: 1; Year of birth: 2022)

Other suggestions included increasing the frequency of mental health checks during pregnancy, involving partners in discussions, and continuing to signpost to appropriate services and support, particularly to community support available. Increasing access to such groups e.g., baby and mum groups in the community, by making access equitable across the NENC region, was also noted as an important facilitating factor for accessing support. Participants also noted the importance for continuing mental health discussions through pregnancy and the postnatal period in order to reduce stigma associated with raising concerns, along with continuing to educate parents on potential mental health difficulties associated with pregnancy and the postnatal period such as signs and symptoms of struggles, and the type of support available/how to access appropriate support, so that parents can feel better equipped for seeking support should they require it.

"Because I think without knowing what the options are it kind of just feels like daunting and again as I said…I didn't want to burden the NHS with my little postnatal anxiety. But if there is sort of yeah, getting an idea of what type of support is available maybe at different levels, yeah…" (P021).

[Participant: "Before the baby was born I had a list in my phone of what days things were on, what times so it meant that even when I was sleep deprived I could just have a look at my notes and think, right it's

Wednesday, right I'll go to that this morning or you know I can get out of the house this afternoon to that. But it's hard because you see some people and they're like, "I didn't even know this group existed." And it's a shame because it would have been helpful for you." (P010; Parity: 2; Year of most recent birth: 2023).

Theme 3: Reproductive health outcomes

Subtheme 1: Individual circumstances/context is important in conversations around postnatal contraception

Participants highlighted the sensitivities around discussing postnatal contraception with healthcare professionals. Many participants felt that the standardised postnatal contraception discussions currently received lacked consideration for individual personal circumstances which affected their decisions around contraceptive care. Circumstances included, but were not limited to; religious/cultural factors, histories of baby loss/fertility issues, and LGBTQ+ families, all of which may affect the suitability of standard postnatal contraception discussions.

"I'm from a big Irish Catholic family, contraception's not something... It's not something that we particularly talk about. Things like coils, IUDs, I just don't want to, I'm not interested in it. If I did have another pregnancy I would be like, right this is another pregnancy, I'm not going to get rid of it. And I think sometimes the conversation that you get, when you're in the hospital it's very much like you, not that I'd be selfish, but it's like you should go on contraceptives because you think, do you know what I mean. It's almost like that guilt thing." (P014; Parity: 1; Year of birth: 2023).

Participants suggested that person-centred approaches, with individual circumstances considered, would lead to more sensitive, and potentially more productive, postnatal contraception conversations. Other factors such as timing of discussions, involving partners in discussions and discussions with a trusted healthcare professional in which a strong rapport was established were also seen as important facilitators of postnatal contraception discussions. For example, participants suggested that earlier conversations during pregnancy around the use of postnatal contraception could support an informed decision being made postnatally, which was reported by many participants as a sensitive, and sometimes controversial time.

"I think after your 20-week scan probably, even just given a couple of leaflets on this is your options for when you've had the baby so you've got all this time to think about it and then maybe like at your 30-week appointment being said, "Have you had any thoughts? Would like a conversation on it? Would you like to go into any depth? Have you got any questions?". So, you're ready for when you do have the baby." (P026; Parity:1; Year of birth: 2024).

However, participants reported a variety of suitable times for discussing postnatal contraception, from 1-2 days to 6-8 weeks postnatally, which they recognised might be a matter of personal preference.

“I think it’s too soon. I think the discussion we had did last a good couple of minutes and she explained everything and at this point you’ve got a brand new baby that is probably screaming or on your breast or whatever, you’ve had sleepless nights, you’ve either had a C section so you're still in pain or obviously you're bleeding and what not down below. I had the stitches and was in terrible pain and I just thought, that is the last thing on both of our minds.” (P017; Parity: 1; Year of birth: 2023).

Subtheme 2: What works well and suggestions for improvements

Many participants reported having sufficient discussions around the use of postnatal contraception, with information being made readily available, along with being able to conveniently access a preferred method of contraception. Facilitators of effective postnatal contraceptive discussions included appropriate timings of discussions, which need to be tailored to individual needs. Participants also felt that to improve discussions going forward, postnatal contraception discussions were best framed as open discussions around family planning more generally, with information given on pregnancy-spacing and the risks associated with rapid repeat pregnancies.

“I maybe was spoken to this time around about even more choices that you could use as contraception, which I think’s good and I had a really good chat with the GP just the other week about coils and she went even though I’d rang specifically to talk about coils, again she mentioned lots of other methods as well and their advantages and disadvantages and what you might expect from them. I did feel like they gave me a good overall idea about the different choices.” (P019; Parity 2; Year of births: 2021, 2023).

Participants felt that open discussions were most productive, as opposed to postnatal contraception discussions being framed as closed questions, as opening dialogue helps to create space for sensitive discussions around personal circumstances, making for more comfortable conversations. Suggestions were also made on preferred formats for providing information on family planning and postnatal contraception such as online resources, flyers, leaflets etc., and making information accessible e.g., overcoming language barriers.

“Yeah I think, I mean I guess, I think I’ve read somewhere that it’s advised that you kind of space out pregnancies by two years or something. I guess a lot of people wouldn’t be aware of that and I mean I don’t know kind of exactly why that is and what the health risks to the mum and the baby are of having a shorter duration between pregnancies. I guess it would be useful to have that information to be informed about it.”

“And maybe more having a conversation with the dad about, “Do you want more kids? If not, have the snip”. Having that conversation as well to not just put all of the burden on the mum who’s already had a lot of hormonal shit. Like make it like a family conversation rather than burdening the mum with everything when yeah, we’re already loaded with hormones and stuff. Yeah. I think yeah. A lot of the stuff I would do differently with regard to that conversation.” (P011; Parity: 1; Year of birth: 2022).

"Maybe education… Like I'm just thinking unless we go to the doctor and we ask for information on the coil… you don't get that information given to you, you have to physically ask for that information… just speaking from a South Asian background, I'm thinking about for mums in my culture who maybe don't speak English as their first language… I'm just thinking about my aunts or someone who have young children, I don't think they have any knowledge about things like the coil or, I don't know, you know when you can get like the injections, IUD injections and things like that." (P025; Parity: 2; Year of births: 2022, 2023)

Theme 4: Maternal healthy weight outcomes

Subtheme 1: Treatment and support across diverse needs

Discussions and support around maternal healthy weight was reported as a sensitive area which ought to be adjusted to personal circumstances and contextualised. For example, some participants felt that they would have benefitted from more support with diet and exercise postnatally. Some reported limited discussions around this area if they presented with a "healthy" BMI, for example support with safely getting back to pre-pregnancy levels of fitness or adjusting levels of fitness for physical activity during pregnancy.

"I think being told we recommend maybe an hour a day doing some sort of exercise, or even half an hour or whatever they recommend being told and we advise that you should do some sort of water activities. You get your pressure off your bump if you're really struggling with how heavy it is and things like that. Even just advice on, for me it was can I go swimming when I'm pregnant. Things like that and I think when, in the end I think they could have really gone into more, this is what we recommend, here's our advice on it but however try not to do these things. Don't over do it by going and doing a cross fit class or something like that. I think it's, just it was very much like just try and stay active. There wasn't any advice and I could have really benefited from just having that little bit of advice." (P026; Parity: 1; Year of birth: 2024).

Similarly, participants reported wanting to have been offered support for lower BMIs and weight gain, particularly around breastfeeding and help with rebuilding energy and weight loss due to feeding:

"I did find though that after my son had stopped his night feeds I lost a huge amount of weight and then things got really busy looking after him and I wasn't feeding myself properly in the months after that and then I lost loads of weight again. For a while I was very, very underweight and really quite ill with it and I've spoke with other people since about it, spoken to my mum and other people and they all have mentioned a similar thing which was never mentioned to me by any of the health care people and I wish I had had warnings about that because it's very hard to regain weight when you've got a tiny child to look after." (P006; Parity: 1; Year of birth: 2021).

Others felt that limited discussions matched their preference as they felt any discussions around weight postnatally could have been detrimental for them due to the sensitive nature of the topic, demonstrating the wide variety of needs which ought to be considered.

> *"I actually quite, actually I quite appreciated that there wasn't more push to like stay active and eating healthy but I was like I'm just surviving here. And having that extra pressure on me would have yeah, made me, yeah I think that would have affected my mental health actually to have that pressure." (P010; Parity: 2; Year of most recent birth: 2023).*

Subtheme 2: What works well and suggestions for support

Of participants who received maternal healthy weight support, for example those diagnosed with Gestational Diabetes Mellitus (GDM), support was suggested to have been thorough and sufficient during pregnancy, particularly if diagnosed during earlier stages of pregnancy. Some participants, however, suggested that they would have benefitted from additional support following pregnancy, such as help from a midwife or health visitor with healthy meal planning e.g., offering realistic meal ideas/recipes for the postpartum period/ suggestions for nutrient dense foods for breastfeeding.

> *"They can use simple things like Badgernet [data recording system] and things or another form of an app where…because most people, I know when I'm cooking things now, I access recipes on my phone, so it would be quite simple to do, but it is, it's about quick and easy things that you can make while you've got ten minutes while the baby is asleep or while you've got them in the sling or whatever." (P027; Parity: 2; Year of most recent birth: 2023).*

Participants also suggested that further conversations, tailored to unique needs including levels of fitness and health, around healthy weight would be beneficial, emphasising the importance of these conversations being approached non-judgementally and sensitively by healthcare professionals. Participants also showed appreciation for being signposted to available (free and paid) community classes e.g., walking groups, postpartum exercise classes etc. and emphasised the importance of improved signposting and accessibility of such groups for promoting healthy weight postnatally. Participants also suggested that further work be done to improve gaps in current NHS guidelines around exercise during and following pregnancy, specifically for those with varying levels of fitness, as they found that current advice was not necessarily suitable. Examples included participants who were highly physically active pre-pregnancy and suggested that they would have benefited from receiving tailored advice to support with appropriate adjustment during pregnancy and postnatally. Responses also suggested a gap in the provision of care for pelvic floor/physical recovery support following birth, suggesting that more thorough physical checks be offered/physiotherapy support being made available to help assist with recovery.

> *"I was offered ante, aquafit aqua natal classes because in [NHS Trust] the midwives run aquafit classes… and I was offered and I would have loved to do it, if I'd lived closer I definitely would have gone along… I felt that*

was really good actually to, because for me I don't think I would go out and seek a pregnancy specific class... Whereas doing it through the midwives it was more of a, you just turn up, if you want to do this aquafit you just turn up whatever week you want to. And that was really, sort of, I really liked that" (P028; Parity: 2; Year of birth: 2023).

"I was like I want to get out but is it safe to do so? Is it safe to go for a walk? I don't know because I haven't been given that advice. When is it safe to start going for a walk? When is it safe to go for a swim? And then you go online and you try and search it up and you try and do your own research and you get told 10 different things. There's no clear advice." (P026; Parity;1; Year of birth: 2024).

"Just a simple like functional fitness physio programme that will just help with the pelvic floor, help with your core, I think would be really beneficial and I think would probably help with a lot of referrals to the oversubscribed gynaecology." (P010; Parity: 2; Year of birth: 2023).

5. Synthesis

Key findings from the three phases of the evaluation were compared, to identify similarities and differences in perspective, to support the interpretation of our findings.

Priority area / Data source	Document analysis	Quantitative analysis of aggregate data	Interviews
Perinatal mental health	Resources were available for both professionals.	4 in 10 women have depression and anxiety. Referrals to mental health have increased over time, and access to support/care within 28 days of referral also increased over time.	Providers reported being more aware and confident about asking questions relating to mental health. Having different pathways for support were also recognised as helpful. However, parents reported that follow-ups were limited and could be improved.
Reproductive health	Resources were available for both professionals and parents.	An increase in time between birth and subsequent pregnancies was observed. Limited regional data were available on LARC prescriptions and uptake.	Training has been accessible and increased provider confidence in engaging with women about contraception, however staffing remained a key barrier to service delivery.

Maternal healthy weight	Resources were available for both professionals.	An increase in BMI recording and identification of GDM was observed.	Increased awareness of importance of addressing maternal healthy weight amongst professionals was reported; however tracking long-term outcomes of provision of support (which was also observed to be variable across the region) remained a challenge. Parents that do not meet the threshold for specialist weight support recommended that they are still offered resources to help them maintain a healthy weight throughout the perinatal period.

6. Discussion

6.1. Strengths and limitations (implementation)

We identified strengths and limitations to the delivery of PHPiM. These are outlined, in relation to each of the priority areas evaluated, in turn.

6.1.1. Perinatal mental health

Documents revealed that there were adequate information and sufficient resources both for parents and providers. These included tools for assessing perinatal mental health, and pathways to support. Whilst we were able to report on resources produced by the PHPiM team, these data do not include those that the PHPiM team have supported or helped to develop alongside commissioners and service providers that are currently implemented or embedded in practice. Thus, it is possible that we have underestimated the reach and influence of the programme on wider public health initiatives in the region.

We have limited quantitative data on perinatal mental health outcomes, however, the available data show that diagnoses of anxiety and depression in pregnancy were at 37.3% of bookings. The qualitative data indicate that parents experienced receiving relevant support and information for addressing perinatal mental health, which supports findings from the 2023 Maternity Survey (12). Indeed, participants described experiences of being signposted

to appropriate services, which is indicative of the utility of the available resource within PHPiM, including assessment tools and structured pathways for support.

Barriers that participants have identified can be addressed in future iterations, for example, increasing partner involvement and ensuring time for women to disclose their needs in a safe and non-judgemental environment throughout pregnancy and postpartum.

6.1.2. Safe pregnancy spacing

We identified documents which offered information on how to support women and families with postnatal contraception and safe pregnancy spacing. There were also documents that were specific for parents to support their decisions around contraceptive options. Quantitative data indicated that the average time from birth to booking (intrapregnancy spacing) is increasing. This trend suggests that safer pregnancy spacing strategies (e.g., postnatal contraception and family planning) are being implemented. This also suggests the active and direct role of the LMNS to deliver contraceptive services/care as specified in guidance published in *Maternity high impact area: Improving planning and preparation for pregnancy* (13), as well as the role of public health practitioners in supporting service implementation in maternity and primary care. Indeed, qualitative data indicated that participants are in receipt of information, resources and support around postnatal contraception; however, views were mixed on the timing of these discussions. Tailoring discussions to meet cultural and religious needs/beliefs and including partners are also important for future iterations of PHPiM.

6.1.3. Maternal healthy weight

Documents offered information on maintaining maternal healthy weight. Limited quantitative data showed an upward trend of women identified with GDM in the early stages of pregnancy. This could be related to an increase in awareness of the importance of identifying GDM in earlier stages, i.e., increase in screening. Recording of BMI at the time of booking was reported to be at 71%. Qualitative data indicated that women received sufficient support regarding maternal healthy weight, however they emphasised that the early identification of overweight/obesity is critical to establishing and maintaining enhanced support. Those that did not meet thresholds for specialist support (e.g., those at lower BMIs) indicated that they also needed support on postnatal weight gain, which needs to be considered in future iterations of PHPiM.

Strengths and limitations (evaluation)

This evaluation offered a comprehensive synthesis of the impact of the PHPiM programme on health and service outcomes, focussing on three priority areas where there is a known knowledge and evidence gap. We used a combination of primary and secondary data, and undertook a comparison of key findings from the different data sources to support our interpretation of the impact of the PHPiM on health and service outcomes. Recommendations for meaningful change in policy and practice were developed in partnership with the relevant stakeholders, ensuring that that these appropriately meet the needs of women.

However, the evaluation has several limitations. For the document analysis, we restricted analysis to those that were in circulation within the region, as produced by the PHPiM team

or LMNS. This means we could have excluded some localised documents that have been influenced by the PHPiM team's work, thereby underestimating the reach of the programme with respect to translating knowledge and evidence into practice. However, we still included a range of documents for the analysis which covered all three areas under evaluation. Regarding secondary data analysis, we were limited to aggregate data and largely unable to undertake further analyses to explore inequalities. Nevertheless, we were able to provide some high-level descriptives on a range of outcomes directly linked with the programme, derived from multiple sources (regional/national datasets). We faced challenges to recruitment, which we attributed to the labelling of our evaluation recruitment materials (i.e., these called for participants who experienced PHPiM), as well as staffing issues (on both evaluation team and participant sample – for provider group). We mitigated this issue by revising our recruitment materials to reflect the three topic areas that we were evaluating. We acknowledge that the views of young mothers and parents are not represented within this report; however this population will be in receipt of a bespoke package of support and care that differs from the population of focus (women aged 18+). Timing of recruitment may also be considered a limitation, particularly for the recruitment of parents, as interviews primarily took place in 2024, with some participants therefore retrospectively commenting on experiences of maternity care access from up to three years prior. Reliance on memory may therefore limit accounts provided, which ought to be considered, and could be mitigated by further research.

7. Recommendations

Based on the findings from this evaluation we propose several recommendations for practice and research.

7.1. Recommendations

7.1.1. PHPiM agenda

7.1.1.1. Continue collaborative working between local authority and NHS Trusts under the work of PHPiM, to support perinatal mental health, reproductive health, and maternal healthy weight (e.g., clarifying sources of, and available funding). For example, ensuring frontline healthcare professionals are included in the development of PHPiM agenda and actions.

7.1.1.2. Continued involvement of women and their pregnancy/birthing partners or significant others in developing the prevention agenda.

7.1.1.3. Continuing to provide healthcare staff with up-to-date, relevant knowledge of local statutory and non-statutory services available for referrals, particularly for perinatal mental health and maternal healthy weight, to ensure that uptake of support is maximised.

7.1.1.4. Developing leaders in prevention in maternity to support practice across the region.

7.1.1.5. Continued evaluative work of programme impact using robust and routinely collected data.

7.1.2. PHPiM service and deliverables

7.1.2.1. Facilitating further collaboration with frontline staff, e.g., establishing a "feedback loop" network whereby frontline staff delivering and implementing PHPiM programme can provide suggestions on service development, implementation and planning based upon experiences of delivering the service on the ground.

7.1.2.2. Further facilitating training for healthcare staff to provide the necessary skills and tools, and increase confidence when discussing potentially stigmatising topics with women and partners e.g., active listening and open, non-stigmatising communication/dialogue regarding maternal healthy weight, mental health, and postnatal contraception/pregnancy spacing.

7.1.2.3. Ensuring that the diverse needs of the population across regions of the NENC are considered and aimed to be met when designing and developing services, this can be facilitated through speaking and involvement of marginalised groups and those with accessibility needs.

7.1.2.4. Facilitating the incorporation and co-production of tools and advice around healthy meal planning for families, e.g., recipe ideas, and other suggestions to support with maternal healthy weight outcomes, so that they are inclusive of diverse needs. Discussions and advice could be incorporated into existing roles e.g., social prescribers.

7.1.2.5. Facilitating the involvement of pregnancy/birthing partners throughout routine care.

7.2. Research recommendations

Based on the findings from this evaluation we have identified several directions for future research.

- Prospective evaluation of impact of the programme on health and care outcomes, using longitudinal methods, including prospective recruitment of participants currently accessing/ delivering maternity care to minimise reliance on retrospective accounts.
- Collaborating with the PHPiM team on developing data collection tools to facilitate comprehensive reporting of outcomes using both quantitative and qualitative sources.

8. Conclusions

The PHPiM programme has influenced practice and service experience across three priority areas: perinatal mental health, reproductive health and safe pregnancy spacing, and maternal healthy weight. PHPiM has provided and delivered a range of strategic leadership alongside support (e.g., guidance, advice, training, facilitating interprofessional collaboration) to professionals for ensuring they are engaged with public health prevention in maternity. Further work and professional support are required to strengthen reproductive health and safe pregnancy spacing, as well as maternal health weight, as indicated by both parents and providers. Continued work to achieve public health prevention in maternity requires the PHPiM team as well as the wider workforce to be supported through further funding to increase capacity to deliver on this agenda.

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