

## **NATURE IN PREGNACY STUDY**

**FULL TITLE: Application Development Award – Mental health and wellbeing among young women: Mapping current green social support, network building, and developing PPI structures to underpin an evaluative study among pregnant young women.**

## **RESEARCH PROTOCOL: V.2**

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## **Version Control Table**

<b>Version</b>	<b>Comments</b>
V1	As submitted and approved by the NIHR PHR funding committee
V2	The addition of some PPI focus groups with providers of nature activities.

## **Funding Acknowledgement and Disclaimer**

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## **Summary of Research**

### **Background**

A quarter of young women report symptoms of mental ill-health[1] and rates are rising.[2] Young pregnant women are particularly vulnerable[4,12] with perinatal and postnatal mental disorders being common co-morbidities of pregnancy.[3] This affects women's wellbeing but also the health of their children.[9,10,11] There is a substantial cost to NHS and social care associated with these impacts on maternal mental health and wellbeing.[9]

Increasing social support is well established as a means to promote mental health and wellbeing in the general population[14,15,16] and in pregnancy.[4,17,18,19] Access to nature has also been found to be beneficial to mental health and wellbeing,[24,25,26,27,28] including for women and pregnant women.[29,30] However more robust evaluative studies are needed.

This project aims to investigate current services and create new networks (including PPI) to support application development for a future study evaluating social, nature based activities to promote mental health and wellbeing in young pregnant women.

### **Aim**

To perform underpinning development work to support an application to a future commissioned funding call.

### **Objectives**

- 1) To conduct a mapping exercise of the social, nature based, support and services available in the East Midlands to promote mental health and wellbeing.
- 2) To develop a young women's maternity research involvement group, to explore their views on acceptability of interventions and barriers and facilitators to participation.
- 3) To develop a comprehensive network of partners to support and/or deliver a future pilot study, including NGOs, policy makers, and any additional academic expertise required.

### **Methods**

The study will map the current provision of community social, nature based activities in the East Midlands. A search for relevant services will be completed and a brief survey sent for more details. Employing a snowball sampling strategy will help to reach other relevant organisations. Through this, our networks, and social media we will contact women with lived experience of pregnancy at a young age (16-24 years) to form a 'Research Influencers

Group' (RIG). We will also conduct focus groups with providers of nature activities. The RIG will review the findings of the mapping exercise to reach consensus about which services/support would be most acceptable to young pregnant women. One or more of those chosen by women will form the intervention to be evaluated in the future commissioned call. We will prioritise organisations working with ethnically and socio-economically diverse groups to help address health inequalities. Alongside this we will strengthen networks with relevant experts and organisations to support a robust design and implementation of a future evaluative study.

### **Timelines**

The study will run for 6 months with a final report delivered by the end of the study. Pre-study to month 1, study set up; the mapping exercise will be completed in months 1-4; months 2-6 will include exploring women's views and developing networks.

### **Impact and dissemination**

The main impact of this study will be to develop a future application to the commissioned call; forming a young women's PPI group and strengthening our networks. The findings of the mapping exercise will be published in an academic journal and made available in an accessible format.

## Background and Rationale

More women in the UK are presenting with mental ill-health than ever before.<sup>1</sup> A quarter of young women now report symptoms of mental ill-health<sup>1</sup> and rates in women continue to rise whilst rates in men have remained stable from 2000 onwards.<sup>2</sup> Pregnant and postnatal women are particularly at risk, as perinatal and postnatal mental health disorders are some of the most common co-morbidities of pregnancy.<sup>3</sup> Recent systematic reviews report the prevalence of antenatal and postnatal anxiety at 15-20% and 10% respectively,<sup>4,5,6</sup> with 17% of mothers experiencing postnatal depression.<sup>7</sup> This can have a devastating impact on women's quality of life, their relationships, and attachment with their child.<sup>8</sup> Maternal mental health problems can also impact child health such as adverse birth outcomes,<sup>8,10</sup> and emotional, behavioural and developmental issues in childhood.<sup>8,9,11</sup> There is a **substantial cost** associated with this to the public sector, particularly to NHS and social care. The combined costs of perinatal anxiety and depression are estimated to be £8500 per woman giving birth; 60% of these costs related to the adverse impact on children.<sup>9</sup>

**Young pregnant women** are particularly vulnerable to poor mental health and wellbeing.<sup>4,12</sup> Antenatal anxiety is significantly associated with young age,<sup>4</sup> and adolescents have an increased risk of becoming depressed during<sup>4,12</sup> and after<sup>12</sup> pregnancy. Other risk factors include a history of mental ill-health;<sup>13</sup> low educational achievement and unemployment; insecure relationships; and current/past pregnancy problems.<sup>4</sup> Lack of social support may also increase of anxiety and depression during pregnancy.<sup>4</sup> However, good quality social support can mitigate symptoms and is important for wellbeing throughout the maternity period.<sup>4,12</sup> Indeed, **increasing social networks and support** is well established as a means to promote mental health and wellbeing.<sup>14,15,16,17</sup> In pregnancy, greater social support networks have been found to have protective effects against health outcomes as diverse as; postnatal depression,<sup>18</sup> pregnancy complication in women with additional risk factors,<sup>17,19</sup> and cortisol secretion, which can be harmful to the foetus.<sup>20</sup> Additional social support in pregnancy has long term benefits on the psychosocial health of mothers and children's health and development.<sup>21</sup> Group approaches to pregnancy care are also well received by young women and offer opportunities for learning and socialising amongst peers.<sup>22,23</sup>

Alongside social support there is increasing evidence that **access to nature** (green and blue space) is beneficial to mental health and general wellbeing,<sup>24,25,26,27,28</sup> and **reduces socio-economic health inequalities**.<sup>29</sup> Regular visits to nature can improve wellbeing, help people feel their lives are more worthwhile and increase happiness.<sup>25</sup> A recent review found that 23 of 25 studies showed positive associations between access to urban green space and mental health in the general population but called for more evaluative studies going beyond cross-sectional surveys.<sup>24</sup> There are also particular benefits to pregnant women as proximity to nature may have stronger protective effects on mental health for females, as well as lower income and lower educated groups.<sup>30</sup> Pregnant women living in greener environments were

around 20% less likely to report symptoms of depression and improving access to green space was suggested as a promising intervention for reducing risk of depression, particularly in disadvantaged groups.<sup>31</sup> These encouraging findings have generally not been derived from samples of young pregnant women, therefore, there is an urgent need for robust evaluative studies to add to this evidence.

**Social and green prescribing** is increasing in the UK as healthcare commissioners and public health bodies acknowledge the associated health<sup>32,33</sup> and economic benefits.<sup>34,35,36</sup> Green space has also been recognised as vital during the COVID-19 pandemic.<sup>37</sup> A cross-government initiative was launched end 2020 with a £5.77m investment to embed green prescribing into communities.<sup>38</sup> This initiative aims to improve mental health outcomes and develop best practice for green social activities, in terms of resilience and accessibility.<sup>38</sup> The East Midlands region secured funding for two of the seven *test and learn* sites nationally; 'Nottingham and Nottinghamshire Integrated Care System', and 'Joined Up Care Derbyshire Sustainability and Transformation Partnership'.<sup>38</sup>

The over-arching aim of this project is to underpin an application to the future NIHR PHR commissioned call. We will **focus on social, nature-based activities** to promote mental health and wellbeing amongst young pregnant women. The project will take place in the East Midlands region (Notts, Derbys, Leics, Lincs, Northants, Rutland) as it encompasses diverse populations in a mix of rural, semi-rural, urban and coastal environments. The East Midlands has similar deprivation scores to the England average.<sup>39</sup> This region also has slightly higher than average adult depression rates and number of births to women aged under 20 compared to the rest of England.<sup>40</sup> Therefore, there is a need to promote mental health among young mothers in this region and the range of environments will ensure findings are generalisable. To our knowledge this would be the first study to investigate the effects of social, nature based, community activities on the mental health and wellbeing among young pregnant women.

## **Aims and Objectives**

**Aim:** To complete development work to underpin and support an application to the NIHR PHR commissioned call on 'mental health and wellbeing among young women' focusing on pregnancy.

**Research question:** a) What green social activities are available to promote mental health and wellbeing, b) are they acceptable to young pregnant women, and c) what networks are necessary to deliver and test these interventions?

### **Objectives:**

1. To conduct a mapping exercise of the social, nature based, support and services available in the East Midlands to promote mental health and wellbeing.
2. To develop a diverse young women's maternity research involvement group, to explore their views on acceptability of interventions and barriers and facilitators to participation.
3. To develop a comprehensive network of partners to support and/or deliver a future pilot study, including NGOs, policy makers, and additional academic expertise.

## **Research Plan**

This project comprises development work to underpin an application to a future commissioned call on promoting the wellbeing and mental health of young women. For these calls our focus will be on the sub-population of **pregnant** young women. This will include: 1) A mapping exercise, 2) gaining the expert views of women 3) Developing networks and partnerships, 4) synthesis.

**1. Mapping exercise (Months 1-4):** We will perform a mapping exercise of community social, nature based, support and services available to pregnant young women in the East Midlands to promote mental health and wellbeing. We will map all relevant support **available** to the general population that meets our inclusion criteria, not only those specifically targeted to this group. Mapping these wider services across a range of sectors will provide a comprehensive picture of what is available which can then be adapted for use amongst young pregnant women in future work. The mapping will follow the processes described in Price et al's (2019) 'Seven steps to mapping health service provision'<sup>41</sup> but



modified for our focus on community rather than NHS services. The seven steps in detail are:

1) Defining target service: The target service is defined as social, nature-based support and/or services to promote mental health and wellbeing which are available to (but not necessarily exclusively targeted at) young pregnant women aged 16 – 24.

*Inclusion criteria:* includes social elements and based in nature (green or blue spaces); service is free of charge to reduce health inequalities based on ability to pay; services which are inclusive to young pregnant women; services which promote mental health and wellbeing; in the East Midlands including local services offered by national organisations.

*Exclusion criteria:* Services targeting individuals with specific health issues, unless pregnancy related; services that aim to treat, rather than prevent, mental health issues; services which exclude young pregnant women; NHS services/support which are not based in the community.

2) Identifying informants: We will use our existing networks, public health departments (LA and CCG), link workers, and directories of voluntary services, along with internet and social media search engines to identify support services. We will engage with the local government funded green prescribing for mental health *test and learn* sites in Nottinghamshire and Derbyshire<sup>38</sup> as we know they already have activities ongoing. Organisations will be asked to complete the survey (explained below), including knowledge of other services/support in the region and contact details. This will create a snowball sampling effect to reach organisations which may only be known by others offering similar support.

3) Designing the survey: A short online survey, created with Microsoft Forms, will be sent to organisations to ascertain the services/support provided. The survey will be designed collaboratively by the research team and our PPI group in Month 1, but it is expected to cover:

- *Organisational issues:* Does the service promote mental health and wellbeing and brief description; Do you evaluate the impact of the service/support or measure particular outcomes?; How long has the service been running?; Are there any plans to scale up?; Costs and funding?
- *Service users and access:* Is the service inclusive to young pregnant women?; If you already work with young pregnant women, would you be willing to help facilitate us gaining their opinions for some future research?; How many people access the service and how is this facilitated?

- *Further information and interest in study:* Do you know of any other local services/support to promote mental health and wellbeing?; Would you be interested in partnering in a future project?

4) Data collection: We will use direct email to organisations identified in step 2 and 3 with a link to the online survey. We will also share the link to the online survey via social media to further the reach of the mapping exercise. If no email address is available or there is no response we will seek to complete the survey by telephone.

5) Data analysis: Data from the survey will be categorised by type of service provided, if/how the service has been evaluated and interest in partnering in future research. This will inform the next stages of the study - exploring women's views and developing networks.

6&7) Communicating findings and updating service map: We will disseminate the mapping in an accessible format through our networks (community groups, specialist midwives, mental health services) and social media. We would also be happy to share the map if a partner organisation wishes to keep it current beyond this project.

#### PPI Focus groups

We will conduct some PPI focus groups with providers of nature-based activities identified in the mapping survey. We will explore their views on how green prescribing works in practice, and whether they see any particular opportunities or challenges in working with young pregnant women. These will be conducted after the young women's focus groups (detailed below) and therefore can also explore any issues raised by the young women.

## **2. Exploring women's views and developing a young women's PPI group (Months 3-6)**

We will engage with organisations identified in the mapping exercise and those we already know who currently work with young pregnant women to facilitate a minimum of three engagement focus group sessions. These will enable young women to learn more about this research and explore their views. We will invite women from these sessions to join us as 'Research Influencers' and to form a Research Influencers Group (RIG). The RIG will act as a PPI advisory board to inform this project and continue into the future commissioned call. We will also advertise the opportunities available to join the RIG on social media and the NIHR 'People in Research' website to ensure that we reach as diverse a population of young pregnant women as possible. We will establish a RIG of 4-6 members, to meet on two occasions in months 4 and 6. Members will be reimbursed for their time in line with NIHR guidelines for public involvement. We will also continue to explore women's views throughout this project by regularly engaging with our established Nottingham Maternity Research Network.

The main focus of the RIG will be to review the findings of the mapping exercise and select one or more suitable interventions that would be acceptable to young pregnant women and potentially most beneficial to their mental health and wellbeing (month 4). These will form the shortlist of interventions to test within the future evaluative study application. In month 6 the RIG will meet to review findings of the study and plan next steps. This will involve the design of the future evaluative study, including recruitment, public facing materials, outcomes, and dissemination.

### **3. Developing networks and partnerships (Months 3-6)**

Organisations providing green social activities: The services shortlisted by the RIG will be contacted to learn more about how they operate and the population they serve. The aim of these discussions will be to ensure services/support could be adapted for young pregnant women. We will prioritise organisations working with ethnically and socioeconomically diverse populations to address potential health inequalities. This stage is important to confirm buy-in of organisations that will deliver the intervention. For ease of access for participants, sustainability, and cost-effectiveness, we expect the majority of these meetings will be via video-call. However, it may be useful to visit some of the candidate services to better understand their offer.

Research and implementation networks: We will discuss amongst our team (mental health, behavioural science; maternity) to agree which additional specific expertise will be necessary to deliver a robust high-quality evaluative study based on the service chosen. Through new and existing networks we will then invite individuals / organisations to join the research team who have expertise in those particular areas to support delivery and to fast-track adoption. This will include representatives from policy and practice communities such as public health, local government decision-makers, link workers, voluntary groups, public services, and researchers.

**4. Synthesis (Month 6)** We will synthesise information and use the networks developed to propose a Theory of Change<sup>42</sup> for the intervention and create an outline research plan for a future feasibility / pilot evaluative study (depending on the intervention selected). These will form the basis of the application to the future commissioned call.

## **Dissemination, Outputs and Anticipated Impact**

The main output will be a final report to NIHR of our findings, including an outline research plan for a future evaluative study, delivered by the project end date. Additional outputs will also include:

1. An academic and plain language publication of the mapping exercise and sharing findings via our networks and social media. The accessible publication will be translated to other commonly spoken languages in the UK.
2. Identification of one or more existing social, nature-based community interventions to be evaluated in a future study that are acceptable to young pregnant women to promote mental health and wellbeing.
3. A network of partner organisations to support the development and execution of a future evaluative study.
4. A new young women's maternity PPI group to continue into the future evaluative study and beyond to leave a legacy of improved involvement of young women in maternity research.

## Ethics approvals

As this study consists of patient and public involvement and service evaluation then there is no need for ethics approvals. However, we will submit details to the University of Nottingham, Faculty of Medicine and Health Sciences Ethics Committee to confirm this. NHS ethical approval is not required as no participants will be recruited through NHS sites.

## Project / Research Timetable

The 6-month project will run from 1<sup>st</sup> March 2022 with the final report delivered by 1 Sep 2022. Elements will run concurrently. See Gantt chart below for a full breakdown.

**Pre-study to month 1 Project set up:** study set up, initial PPI work during regular Nottingham Maternity Research Network meetings.

**Months 1-4 Mapping exercise:** Month 1: Defining target services, identifying informants, survey design. Months 2-3: Survey distribution, data collection, identifying new services through snowball sampling and redistributing survey. Month 4: Data analysis, report of findings, dissemination.

**Months 2-6 Developing networks/ partnerships and exploring women's views:** Months 2-3: Contacting relevant services to confirm interest and relevance as soon as data is acquired; PPI engagement sessions and inviting women to join the RIG; shortlisting suitable services. Month 4: Forming RIG; sending shortlist to RIG and meeting to discuss and reach consensus

on services that would be acceptable to young pregnant women; research team meeting to discuss and agree on potential skills/experience gaps for future study. Month 5: Meetings with service providers selected to discuss involvement in future funding application; identifying and meeting with additional experts needed to discuss interest in study. Month 6: RIG meeting to discuss findings.

**Month 6: Study synthesis & writing and delivering NIHR report:** with input from the RIG.

6 month project – Commencing March 2022	Month						
	Pre-study	0-1	1-2	2-3	3-4	4-5	5-6
<b>Management and governance</b>							
Project management meetings							
RIG (PPI) meetings							
Nottingham PPI Network meetings							
<b>Project set up</b>							
<b>Study execution</b>							
Service mapping exercise							
Exploring women's views							
Developing networks							
Synthesis							
<b>Reporting and dissemination</b>							
<u>Two month</u> interim report to funder							
Outline research plan and Theory of Change							
Final report to funder							
Draft academic publication and accessible summary							
Stakeholder dissemination							

Figure 1- Gantt Chart

## Project Management and Governance

### Study development and management

GS (PI) will have overall responsibility for managing and running the study, supported and mentored by HS (Co-PI). This includes working with stakeholders, data collection and analysis, dissemination, and developing future application.

### Monitoring and reporting

Project management meetings with all co-applicants will be held monthly. A progress report (month 2) and final report (month 6) will be provided to the funder. The PPI group (RIG) formed as part of the project will meet in months 4 and 6, and the study progress will be presented to the Nottingham Maternity Research Network PPI group during regular quarterly meetings.

## **Financial management**

The PI will manage finances employing the University of Nottingham's financial processes and management systems. The University's finance team will assist in producing the necessary finance reports.

## **Patient and Public Involvement**

HS will lead PPI activities and is experienced in delivering high quality PPI work. We will invite at least one member of the RIG to be a co-applicant in our application to the future call and others to continue as RIG members.

## **Project team and expertise**

The proposed research team have extensive experience of healthcare and public health research, particularly amongst pregnant women, young people, and vulnerable groups.

**Dr Gina Sands (Principal Investigator):** Senior Research Fellow in Maternity Care. Sands is an experienced healthcare researcher with a background of Human Factors and interdisciplinary public health research.

**Professor Helen Spiby (Joint-Principal Investigator):** Professor of Midwifery. Spiby has experience of conducting maternity research with disadvantaged women and of leading high-quality PPI work.

**Professor Holly Blake (Co-Investigator):** Professor of Behavioural Medicine & Chartered Health Psychologist. Blake brings expertise in behavioural science, self-management, and patient experiences in research.

**Dr Tim Carter (Co-Investigator):** Assistant Professor in Mental Health, Registered Mental Health Nurse and Accredited Cognitive Behavioural Psychotherapist. Carter brings clinical and research experience in young people's mental health and physical activity.

## **Success criteria and barriers**

The measures of success for this project are 1) complete on time and on budget, 2) produce outputs (map, research plan) to underpin and support a future application to the commissioned call, 3) establish PPI thus facilitating the meaningful involvement of women with lived experience. Completion of this project is comfortably within the capabilities of the

research team and therefore relatively low-risk. The main potential barrier to the success of the study is the short timescale (6 months). Involving young women in research can be challenging, however we have identified organisations who will facilitate PPI engagement sessions. We do not expect further waves of COVID-19 to affect the progress or completion of the study as most work will be remote and services are likely to operate outside.

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