



# The Role of Maternity Services in Reducing the Prevalence and Cost of Perinatal Depression and Anxiety during COVID-19 in England

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**Commentary**

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## Abstract

In 2020 the novel coronavirus outbreak (COVID-19) was declared a global pandemic. Pregnant women have been recognised as a group specifically at risk during this time due to the impact that the COVID-19 infection may have on the health of the birthing person and the unknown impact of vertical transmission to the fetus. Pregnant women also have a recognised risk of perinatal mental health problems including depression and anxiety. The aim of this paper is to summarise the impact of the COVID-19 pandemic and associated infection control measures on perinatal depression and anxiety in England, the cost of the additional impact and the role of English National Health Service (NHS) trusts and maternity services in reducing the impact and cost.

Studies including systematic reviews and meta-analyses have found a 3 to 5 fold increase in perinatal depression and anxiety during the COVID-19 pandemic compared to non-pandemic times. This increased prevalence, if also seen in England, is at a potential cost to society of £10.6 billion for depression and £6.9 billion for anxiety, including a cost to the health care sector of £649 million and £1.7 billion respectively.

Health care Trusts and maternity services have an important role to play in reducing this cost, not just in providing maternity care, but also in monitoring the health of the population and referring onwards where needed. Modest improvements in the availability of social support including improved partner involvement during pregnancy and labour and support given by health care staff during maternity care have the potential to reduce the risk of perinatal depression and anxiety. Signposting to and provision of perinatal mental health services, particularly for women at risk, is also likely improve outcomes for birthing people and their infants and hence to reduce the total cost to society of perinatal mental health problems.

**Keywords:** Maternity Services; Perinatal Mental Health; Perinatal Anxiety; Perinatal Depression; Covid-19

**Abbreviations:** COVID-19: Coronavirus Disease; NHS: National Health Service; UK: United Kingdom; WHO: World Health Organisation; PTSS: Post-Traumatic Stress Symptoms.

## Background

In January 2020 the World Health Organisation declared the novel coronavirus outbreak (COVID-19) a

public health emergency of international concern [1], and a global pandemic on March 11 2020 [2]. Since then the global pandemic has had a devastating impact on the lives of millions of people around the globe. Pregnancy has been highlighted as a particular factor that can increase the risk of negative outcomes as a result of pandemics, including concerns about the vertical transmission of infection from the birthing person to the baby [3].

The aim of this commentary is to discuss the potential impact of the COVID-19 pandemic on pregnant women's mental health in England and how this may have interacted with measures put in place by English National Health Service (NHS) hospital trusts and maternity services to reduce the spread of COVID-19. We estimate the potential short and long-term costs of these measures and highlight the role Trusts and maternity services can play in reducing that cost.

### **Prevalence of Perinatal Depression and Anxiety during COVID-19**

Studies including systematic reviews and meta-analyses have found that during the COVID-19 pandemic there has been an increased prevalence of perinatal depression and anxiety for pregnant women and women in the first year to 18 months following birth, with a 3 to 5 fold increase in depression and anxiety symptoms. Prevalence estimates of perinatal depression and anxiety separately were 7-12% pre COVID-19 in non-pandemic times, with an increase to 33-57% during the pandemic [3-7] with the majority of evidence originating from China, Canada and Europe [5]. Strong evidence of the prevalence of perinatal mental health in England during the COVID-19 pandemic has been slow to materialise. Grey literature reports based on large patient surveys in the United Kingdom (UK) have reported an increase in anxiety and distress during pregnancy and labour as a result of the changes, particularly in relation birth partner and visitation restrictions [8,9]. Cohort studies in the general population have shown an increase in anxiety and depression symptoms in England during COVID-19 compared to non-pandemic times, with women and other people identified as being at risk for COVID-19, including pregnant women, showing even greater symptoms [10]. The impact on pregnant women though was not reported separately in the study. Conversely, a population study using routine data has shown a lower proportion of people accessing primary care for depression and anxiety compared to pre COVID-19, which is likely to exacerbate the long-term impact [11]. In a survey of pregnant women in the UK, 47% of those that accessed specialist mental health services have reported that this support has not continued during the COVID-19 pandemic [8].

### **Maternity Services and their Role in Perinatal Mental Health**

Women's ante and post-natal care has also been affected. A survey conducted in England by Pregnant Then Screwed in October to November 2020 found that 52% of women have attended scans alone, and visiting restrictions have meant that 33% have had to spend more than 48 hours alone on a maternity ward. 7% of women gave birth alone [12]. These

restrictions have also had an impact on women's decisions regarding care, with reports that women are less likely to take up induction [13] and more likely to consider free-birth [14].

These changes to care are likely to have played a role in the increased prevalence of perinatal depression and anxiety during COVID-19. Although multiple factors over which health care services have no power may have contributed to the increased prevalence of perinatal anxiety and depression – reduced financial and housing security, fear of the health impacts of COVID-19 on the birthing person themselves and concern about potential transmission to the unborn baby [15], as well as social measures such as lockdowns – there do remain domains in which health care services have control. In particular, such services have a role in monitoring the mental health of the population and referring for treatment [16], with maternity care services being a key health care contact point for pregnant women.

One key protective factor against the risk of developing perinatal depression and anxiety, particularly during a pandemic, is social support [3,17,18]. Studies have shown that pregnant women who experience more support from the birth father, as well as wider social support, also have babies with a higher birth weight. The hypothesised mediating factor for this is that increased stress and anxiety can reduce a new-born's birth weight by impacting on the expression of hormones in the womb which influence the growth of the baby [19]. Reviews have also consistently shown evidence of the wider positive effect that involvement of the birth father in scans and during pregnancy can have on the health of the mother and baby [20]. Improving partner engagement in antenatal care and birth is a World Health Organisation (WHO) recommendation because of the strong evidence of its protective effect [21], the importance of this recommendation was reiterated by the WHO during the COVID-19 pandemic [22] and echoed elsewhere in the wider medical community in the UK [23].

NHS Trusts and maternity services have a key role to play in ensuring that maternity care is delivered in a way that can increase the social support experienced by the mother and hence potentially reduce anxiety and depression, even if they can't control government policies to reduce social contacts and households mixing. The Royal College of Obstetricians and Gynaecologists (RCOG) have noted the potential role that maternity services have played in the increase in perinatal anxiety and depression prevalence in their most recent COVID-19 guidance [24]. A study of pregnant women in Italy from March to June 2020 also found that supportive health care staff during birth was a particularly protective factor for reducing postnatal depression and post-traumatic stress symptoms (PTSS), with a 54% reduction in the

case of depression and 41% for PTSS [25]. As highlighted above, improving involvement of the partner during care is also incredibly important [17]. Identification of women at increased risk, particularly those who have had previous mental health diagnoses and ensuring access to services is likely to also help address some of the increased prevalence of perinatal depression and anxiety, with the RCOG recommending that maternity services are vigilant about pregnant women's mental health [24]. Although face-to-face access to services may have reduced, studies have suggested that e-mental health interventions may provide a second best alternative [3].

Untreated perinatal depression and anxiety can have a wide range of negative impacts on the mother, child and wider family, with a number of these impacts translating to a significant cost to the health services and society. Perinatal mental health has been shown to impact negatively on mother and child bonding during the critical period following birth [25,26]. An increased risk of childhood behavioural disorders has also been linked to perinatal depression and anxiety, with an estimate that the total lifetime cost to society of perinatal mental health of £6.6 Billion in the UK in 2016 [27].

### **The cost of perinatal depression and anxiety in England April 2020 to March 2021**

There were an estimated 591,759 births in England in April 2019 until March 2020 [28]. There are currently no figures on the total births from April 2020 until March 2021, but the first three quarters of 2020 saw a reduction in births of 3.6% compared to 2019 [29], resulting in an estimated 570, 456 births during this period. Assuming that England saw an increase in prevalence from an upper estimate of 12% prevalence of perinatal depression prior to COVID-19, to a lower estimate seen in other studies of 33% during COVID-19, this represents a conservative lower estimate of an additional 119,796 cases of post-natal depression from the beginning of April 2020 to March 2021.

The cost of perinatal depression in England had previously been estimated using a lifetime decision model and values from the literature as £87,984 per case for the lifetime costs of the mother woman and child [27] in 2020 prices [27,30]. Health care costs for the woman, including the cost of treating depression, are estimated as £2023 per woman, with health care costs for the child including pre-term birth and cognitive impairment estimated as £3394 per child. Child education and criminal justice costs were estimated at £4448 and £2336 per child respectively, predominately driven by conduct issues. The cost of productivity losses were estimated as £3630 per woman and £6,787 per child, with health related quality of life losses and lost life including the

risk of suicide coming to £20,412 per woman and £36,238 per child, calculated based on a valuation of £25,000 per health related quality adjusted life year lost. The cost of the child being a victim of crime is estimated at £8,926 per child over their lifetime.

Multiplying the total lifetime cost of perinatal depression (£87,984) by the estimated number of additional cases of perinatal depression in England from April 2020 to March 2021 (119,796) the total additional lifetime cost of perinatal depression then as a result of COVID-19 could be estimated at approximately £10.6 billion, with £649 million being borne by the health care sector, £816 million by for other public services such as education and criminal justice, and £9.1 billion for wider societal costs including lost productivity, loss of life and health related quality of life losses. If increased partner or family involvement during maternity care or supportive health care staff could reduce this by 50%, as suggested by some studies [25], this would reduce the total number of cases by 59,898 and hence the total cost to society by £5.3 billion, including £324 million to the health care sector. Reducing it by even 10% would reduce the total number of cases by 11,980 and hence the total cost to society by £1 billion, £65 million to the health care sector.

Perinatal anxiety has similar cost implications: assuming an 8% prevalence pre COVID-19 and a 37% prevalence after, this would be equivalent to an additional 165,432 cases of perinatal anxiety from April 2020 to March 2021. The lifetime cost of perinatal anxiety in England, estimated using the same lifetime decision model as perinatal depression, was £39,575 per case for the lifetime costs of the woman and child [27] in 2020 prices [30]. Health care costs for the woman, including the cost of treating anxiety, are estimated as £5,179 per woman, with health care costs for the child including pre-term birth, emotional problems and chronic abdominal pain, estimated as £3394 per child. Child education and criminal justice costs were estimated at £394 and £668 per child respectively. The cost of productivity losses were estimated as £6,592 per woman and £2,084 per child, with health related quality of life losses and lost life coming to £13,157 per woman and £3,500 per child, calculated based on a valuation of £25,000 per health related quality adjusted life year lost. The cost of the child being a victim of crime is estimated at £2,524 per child over their lifetime. The cost of perinatal anxiety also includes a cost of £2,268 per child to reflect the cost of unpaid carer time spent looking after a child with chronic abdominal pain.

Multiplying the total lifetime cost of perinatal anxiety (£39,575) by the estimated number of additional cases of perinatal anxiety in England from April 2020 to March 2021 (165,432) the, estimated with a total cost to society is of £6.9 billion, with £1.7 billion borne by the health care sector.

Studies suggest that 46% of the increase in perinatal anxiety could be attributed to reduced partner support during labour [25]. If this is the case, improved visitation restrictions could potentially reduce the cost to the health care sector associated with the increased prevalence of perinatal anxiety during COVID-19 by £802 million and £3.1 billion to society as a whole.

Putting this in the context of an English NHS Trust, from April 2019 until March 2020 each Trust in England on average had 3116 births [28]. Assuming the same 3.6% reduction in births in 2020 to 2021 [29] that would be an estimated 3004 births per Trust, and an additional 631 cases of perinatal depression and 871 cases of perinatal anxiety during COVID-19, at an additional health care cost per Trust of £12.6 million (£3.4 million for depression and £9.2 million for anxiety). This could be reduced by £5 million (£1.7 million and £4.3 million respectively) by facilitating partner and family support and implementing interventions to support staff in supporting birthing people.

## Conclusion

It is likely that the prevalence of perinatal depression and anxiety rose during COVID-19 in England, although there is currently limited data on this. If the increases seen was similar to lower estimates of those seen in Canada, Europe and China then there is the potential that perinatal depression will cost society an additional £10.6 billion and perinatal anxiety £6.9 billion with a total cost of £2.4 billion to the health care sector (£12.6 million per Trust on average). Modest improvements in the availability of social support during maternity care have the ability to reduce this risk, including improved partner involvement during pregnancy and labour and support given by health care staff. Signposting to and provision of perinatal mental health services, particularly for women at risk, is also likely to reduce the total cost. Visitor restrictions for ante and post-natal hospital stays need to balance the potential reduction of risk of COVID-19 transmission with the potential risk and long-term cost and consequences of perinatal depression and anxiety. Services should consider these impacts as part of their decision-making processes in the short term in relation to the current COVID-19 pandemic, and also in relation to any future pandemic scenarios.

## Declarations

- **Ethics Approval and Consent to Participate**

Not applicable

- **Consent for Publication**

Not applicable

- **Competing Interests**

The author declares that they have no competing interests.

- **Availability of Data and Materials**

The datasets analysed during the current study are available from NHS Digital, NHS Maternity Statistics, <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-maternity-statistics/2019-20>

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