

White A., Erskine S., and Seims A
 (2019) The State of Women's Health
 in Leeds, Leeds City Council, Leeds

14. Maternal health and motherhood

14. Maternal health and motherhood	1
14.1 Introduction	2
14.2 Pre-conception health	3
14.3 Pregnancy support	5
14.4 Birth choices and support during labour	7
14.5 Child removal into care	9
14.6 Maternal death	10
14.7 Miscarriage and stillbirth	10
14.8 Breastfeeding	12
14.9 Long term physical effects of pregnancy and childbirth	14
14.9.1 Haemorrhoids, anal fissures and constipation	15
14.9.2 Urinary and bowel leakage / incontinence	16
14.9.3 Pelvic organ prolapse	16
14.10 Perinatal mental health	17
14.11 Maternal and child nutrition	20
References	21

14.1 Introduction

Each year in Leeds about 10,000 babies are born, for many women the birth will go well and the mother and family can move on, but for some women, the transition to motherhood can be very challenging, both physically and emotionally (Erskine 2014).

The Maternity Strategy for Leeds 2015-2020 (NHS 2015), recognises that for both the health of the mother and to give the child 'The best start in life' (PHE 2016b), there needs to be a concerted effort to reach out to all potential mothers (and fathers) to improve their health from pre-conception through to motherhood. This builds on the importance of the first 1001 critical days¹ of life – from conception to 2 years – where the child is undergoing its most important growing phase and getting it right here can have a lifetime of benefit for the child and even their offspring.

The Leeds strategy seeks to ensure that all women have personalised care and feel respected and supported. This is important as for many women and men, this is the most significant event in their life, and one where they can feel the most vulnerable.

The Leeds Women's Voices study (Thomas and Warwick-Booth 2018), suggests that some women felt the maternity service lacked an appreciation of the women's concerns:

"I understand they must see lots of... women coming and giving birth all the time but you have to treat people like they're human not like they're- on a conveyor belt of... birthing."

Leeds has set up a reference mechanism to get continuous feedback on their services through the Maternity Voices Partnership². It's also important to note that the Care Quality Commission, which surveys users of services, found in their 2018 review of maternity services that Leeds Teaching Hospitals NHS Trust was doing better than expected as compared to other Trusts³.

This section will outline the current health status of women with regard to their maternal health and the challenges they face.

¹ <https://www.1001criticaldays.co.uk>

² <https://www.mvpleeds.com>

³ https://www.cqc.org.uk/sites/default/files/20190129_mat18_outliers.pdf

14.2 Pre-conception health

Pregnancy is one of the most physically and emotionally challenging times for the mother, bringing great anatomical and physiological changes. As the body adapts to cater for the developing embryo it requires substantial resources, which are best met in a healthy mother (and father).

A series of studies are reported in the Lancet on the importance of preconception health (Barker et al. 2018; Fleming et al. 2018; Stephenson et al. 2018). They report the significant negative consequences of poor maternal and paternal health on their offspring, with an increased risk of their children developing life-limiting and chronic ill-health. The health of the mother and father also has an impact on their grandchildren, as any health issues may be passed through to the eggs developing in the ovaries of their daughter as well.

The health of the father has been previously overlooked as a key factor in a healthy pregnancy, but it is now recognised as also being very important, to ensure their sperm is optimal. The most significant health risks occur when the mother or father are obese or underweight, has a poor diet that is low in macro and micronutrients, is a smoker, has a high alcohol intake or substance abuse (Dean et al. 2014; Lassi et al. 2014; King 2016; Hemsing et al. 2017).

Both the mother and the baby are also at increased risk if they have had a short period between pregnancies, such that postpartum family planning (PPFP), or the immediate implementation of contraception after delivery, is most important (RCOG 2015; FSRH 2017b). A study conducted in Edinburgh found that 1 in 13 women who required an abortion or were giving birth were doing so within one year of their previous pregnancy (Heller et al. 2016). The body needs time to recover from the stress of pregnancy and it is advisable to have a two-year gap. The importance of PPFP is outlined by the RCOG (2015):

- PPFP can save mothers' lives – family planning can prevent more than one-third of maternal deaths. PPFP can also save babies' lives – family planning can prevent 1 in 10 deaths among babies if couples space their pregnancies more than 2 years apart.

- Closely spaced pregnancies within the first-year postpartum increase the risks of preterm birth, low birthweight and small-for-gestational-age babies.
- The risk of child mortality is highest for very short birth-to-pregnancy intervals (i.e. less than 12 months).
- The timing of the return of fertility after childbirth is variable and unpredictable - women can get pregnant before the return of menstruation.

In Leeds the teenage pregnancy midwives are pioneering the delivery of postnatal contraception based on the guidelines of the Faculty of Sexual and Reproductive Healthcare (FSRH 2017). The Leeds Sexual Health Service have also started doing in-reach clinics on the postnatal wards to improve rapid access to contraception post-natally. There are also plans in Leeds of a trial of offering coil insertion at elective caesarean section.

From a biological perspective the most critical time are the weeks around conception, which is the time the embryo is most sensitive to environmental factors such as the availability of a good diet, and the effect of smoking, alcohol, drugs and other teratogens (Stephenson et al., 2018). The 6 or more months prior to conception are therefore seen as an opportunity to make specific preparations for a pregnancy, such as losing (or gaining) weight, cutting back on alcohol, ceasing smoking etc. (for both the female and male). The benefits of having a longer-term public health perspective from adolescence onwards, is that healthy behaviours are in place prior to conception, even if pregnancy is not anticipated or planned for. Younger women from the deprived areas of Leeds are more likely to be smokers at the point of conception and throughout their pregnancy (Erskine 2014). They also have a greater chance of being overweight at conception (25% with a BMI >30, compared to 20% in the not deprived areas), and underweight (4% BMI < 18.5, compared to 2.7% in the not deprived). This is important, as once the pregnancy has started lifestyle interventions for obese women unfortunately have little effect on lowering the prevalence of gestational diabetes, or lowering the prevalence of caesarean delivery, large for gestational age fetus, or birth weight (Oteng-Ntim et al. 2015).

A study from America (Squiers et al. 2013) found that women who were planning a baby had a very different perception of pre-conception care than those who were not considering parenthood. They also found that the women saw it more as a way of creating a healthy baby, rather than avoiding an unhealthy birth outcome. They advocated a different approach to health promotion depending on segmenting the audience on their plans over the following 2 years using a social marketing approach. There is also a worry that trying to get all women (and men) to change their lives on the basis of a hypothetical baby that they may or may not want could be counter-productive for many and may increase intransigence to change (Thompson et al. 2017).

For those women who are planning a pregnancy there is greater receptivity to the need for health changes and it is a good opportunity for parents to be advised on delaying stopping contraception until health improvements have occurred.

There are studies underway to try and find the best approach to provide pre-conceptual care, including the mHealth programme 'Smarter Pregnancy' (van Dijk et al. 2017).

14.3 Pregnancy support

Across England there have been a recent decline in conception rates across all ages, except in the over 40's (ONS 2018l) (Figure 1). Across Leeds the rate of teenage conceptions was 28 per 1,000 women aged 15-17 years in March 2017, as compared to a national rate of 18.5 for England and 21.3 for Yorkshire and the Humber as a whole (ONS 2018m). The numbers of teenage pregnancies in Leeds have been falling, from 631 in 2000 to 330 in 2016.

The reasons for an increased number of women conceiving at ages 30 and over include increased participation in higher education, increased female participation in the labour force, increased importance of a career, the rising opportunity costs of childbearing, labour market uncertainty and housing factors (ONS 2018l).

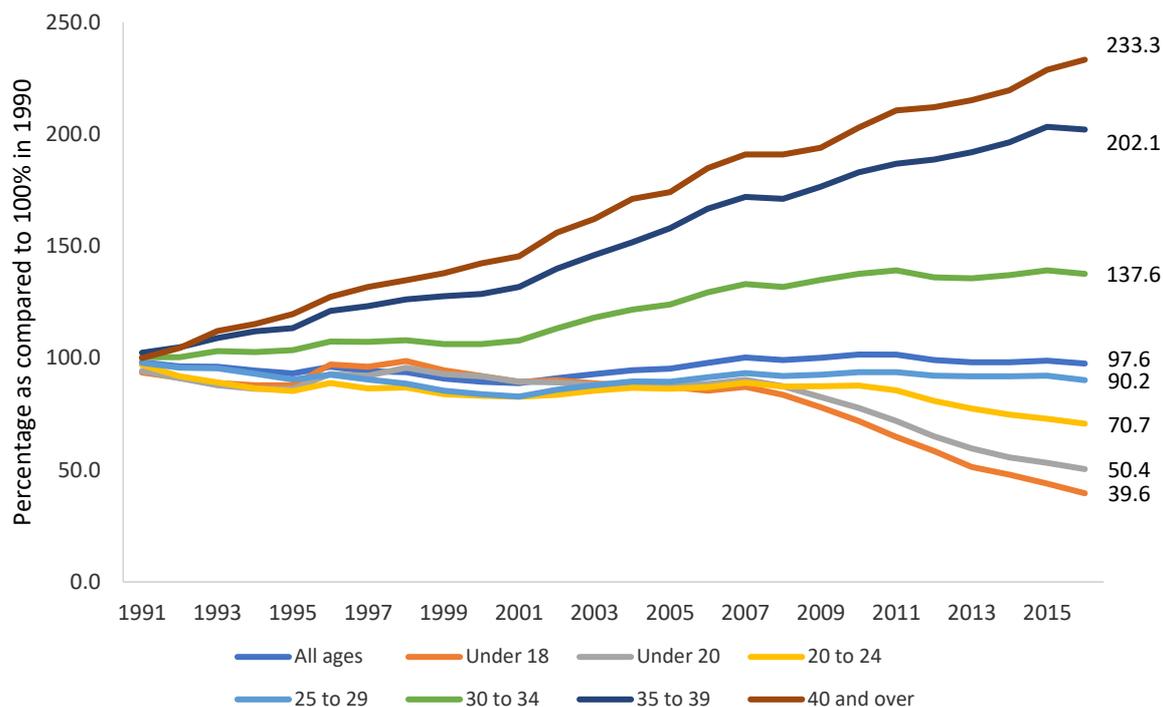


Figure 1 Relative changes in age-specific conception rates, displaying change from a 1990 base through to 2016, England & Wales,

Booking in for antenatal services is an important opportunity to receive support and guidance for the pregnancy, safe delivery and care of the infant. Mothers in deprived areas of Leeds are less likely to attend clinic after 10 completed weeks since conception (with 76.4% of not deprived women attending within 10 weeks of conception, compared with 68.2% in deprived areas) (Figure 2). Although this has been improving, the gap between the deprived and those not deprived has stayed about the same.

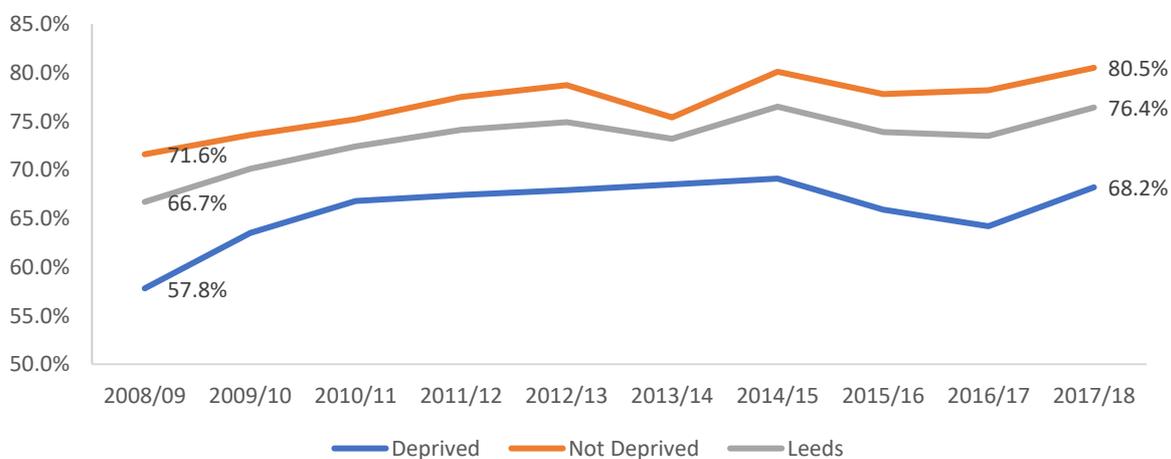


Figure 2 Percentage of mothers attending within 10 weeks of conception by deprivation status and year, Leeds

Underage pregnant girls are also in need of support:

'[teenage pregnancy] creates feelings of uncertainty and insecurity that generate anxiety, insomnia, intense feelings of ambivalence and confusion, as well as certain symptoms of depression, feelings of sadness, suicidal thoughts and irritability' (Trandafir et al. 2016).

Around 7 out of every 10 pregnant women will experience some form of sickness during their pregnancy, which usually passes at around the 14th week, however there are some that have continual sickness throughout their pregnancy. This is known as hyperemesis gravidarum and can result in hospitalisation and a very negative quality of life (NHS 2016h). It has been estimated to affect up to 1 in 100 women, and with 10,000 pregnancies a year in Leeds relates to 100 women across the City.

14.4 Birth choices and support during labour

The National Maternity Review (National Maternity Review 2016) made a recommendation that all women should be given the choice as to what support they needed during their birth and where they would prefer to give birth, based on a full discussion on the risks and benefits associated with each option. NICE, guidance for intrapartum care for healthy women and babies (NICE 2014) advocates:

- Advise low-risk multiparous women that planning to give birth at home or in a midwifery-led unit (freestanding or alongside) is particularly suitable for them because the rate of interventions is lower and the outcome for the baby is no different compared with an obstetric unit.
- Advise low-risk nulliparous women that planning to give birth in a midwifery-led unit (freestanding or alongside) is particularly suitable for them because the rate of interventions is lower and the outcome for the baby is no different compared with an obstetric unit. Explain that if they plan birth at home there is a small increase in the risk of an adverse outcome for the baby. (p5)

Voluntary Action Leeds (VAL 2018) undertook an engagement exercise to explore the influencing factors in regard to choice of birthplace and the perceptions of information preferences in regard to birthing choice. The study comprised a survey and interviews and their main findings were:

- Hospital birth was commonly framed as the default option for families, with some participants indicating that homebirth was not an option for them.
- Choice of birth place was perceived to be informed by a number of factors, with advice from medical professionals, advice from family members and peers, and past experiences the most often cited, however concerns about risk and safety appeared to underpin much of the discussion.
- Awareness of homebirth across the engagement was variable. There appeared to be inconsistent provision of information around homebirth, with some participants stating that they had received little or no information about homebirth from health professionals.
- ‘Advice given by health care professionals’ and ‘positive or negative stories about types of birthing’ were seen as key mechanisms for influencing opinion change.
- Groups with different cultural and religious backgrounds may present with additional information and support needs which need to be recognised.

The review of birthing choices in Leeds undertaken by Bennett (2017), found that Leeds was below the national average of homebirths, with 0.7% of all births in February 2017 and declining. Since that review there has been a communications campaign across Leeds to support home births alongside the development of a model of care to increase awareness of options⁴. There is also now a dedicated team ‘Leeds Loves Homebirths’ that are promoting the benefits of homebirths in Leeds and supporting those women who wish to make that choice⁵. This has resulted in a steady increase in homebirths to 3.1% in December 2018, with the aim of reaching 5% by the end of 2021.

⁴ <http://www.leedsth.nhs.uk/a-z-of-services/leeds-maternity-care/what-we-do/care-during-your-birth/having-your-baby-at-home/>

⁵ <https://www.facebook.com/leedsloveshomebirths/>

14.5 Child removal into care

In 2014 there were 103 children under 1 year of age removed from their parental home into care, with Leeds having amongst the highest percentage of repeat care proceedings (national average 29%, Leeds 37%) (Leeds City Council 2017e). Since 2014 there has been a reduction in the number of babies taken into care, but this is still above the national average.

A study conducted at Lancaster University (Broadhurst et al. 2017) into vulnerable birth mothers found that there was a pattern of repeated care proceedings for some women. This has a profoundly negative effect on both the mother and the child, with the grief leading to mental health difficulties and a greater likelihood of further negative life events. In their study, many of the women were already very vulnerable, with 40% having been in care, often aged 10 years or older, and had experienced multiple placements. They were mostly under the age of 20 years, and the pregnancies were unplanned. These women have the most complex lives; the study found that that 66% of recurrent mothers had experienced neglect in their childhood, 67% emotional abuse, 52% physical abuse, and 53% sexual abuse, with an ACE⁶ score of 4 or more.

The Department of Education independent evaluation (McCracken et al. 2017) into the services offered by Pause⁷, an organisation that works with vulnerable women at risk of having their children removed at birth, found good results, but the initiative has strict criteria to follow for women and families to be accepted onto the programme, including mandatory use of long-acting reversible contraception. In Leeds, a new service called 'Futures' is being developed to work with young women and men who have experienced the removal of a baby (Leeds City Council 2017e). This service is based on the Leeds Practice Model (Leeds City Council 2017f), and is focused onto providing intensive support to those most vulnerable. This initiative is closely linked

⁶ ACE - Adverse childhood experiences score is based on (a) physical abuse, (b) sexual abuse, (c) removal from a single-parent household, (d) exposure to community violence, (e) number of caregiver transitions, and (f) number of school transitions.

⁷ <https://www.pause.org.uk>

with the Broadhurst study at Lancaster to help find the most effective way of helping vulnerable birth mothers.

14.6 Maternal death

A maternal death is defined internationally as a death of a woman during, or up to six weeks (42 days), after the end of pregnancy (whether the pregnancy ended by termination, miscarriage or a birth, or was an ectopic pregnancy) through causes associated with, or exacerbated by, pregnancy (World Health Organisation 2010). Across England the number of women who die during their pregnancy or as a result of childbirth has fallen over the decades, but still 42 women died in 2016 (ONS 2018h). Of the 973 maternal deaths in the UK that occurred between 2009 and 2013, over 90% occurred post-delivery (Davies 2015). In Leeds there were less than 5 deaths between 2013 and 2015, so thankfully it is rare, but devastating for all concerned (NHS Digital 2018e).

Nationally two thirds of mothers died from medical and mental health problems in pregnancy and one third from direct complications of pregnancy such as bleeding. Three quarters of women who died had medical or mental health problems before they became pregnant. Women with pre-existing medical and mental health problems need pre-pregnancy advice and joint specialist and maternity care. Sepsis and the Flu are important causes of maternal death with the advice that the Flu vaccination can save the lives of both mother and child (Knight et al. 2014).

14.7 Miscarriage and stillbirth

Losing a baby⁸ is both physically and emotionally traumatic and is a time of great need for the mother and her partner (Wonch Hill et al. 2017; Cullen et al. 2018). The wider family and friends can also be greatly affected by the loss (Murphy and Jones

⁸ Miscarriage is classed as a death before 24 weeks, after this time a death is classed as a stillbirth (delivered after 24 weeks, but showing no signs of life) or a neonatal death (NND) (born alive, but died before 28 completed days after birth) (Draper et al. 2018).

2014). Helping the family through this difficult time is very important (Bakhbakhi et al. 2017).

Across England and Wales there were 3,112 stillbirths in 2016, with the numbers falling each year (ONS 2016f). In Leeds (Draper et al. 2018) there were 4.08 stillbirths per 1,000 births, 1.78 neonatal deaths per 1,000 live births and 5.85 deaths per 1,000 births in the extended perinatal period in 2016. In 2018, there were 122 deaths before 24 weeks, 41 later than 24 weeks, with 19 neonatal deaths.

When there has been a diagnosis of threatened miscarriage, there is an increased risk of antenatal depression in both the women and her partner (Zhu et al. 2018a), which can have an impact through into subsequent pregnancies and require additional monitoring and support (Lee et al. 2017).

Women who have had a miscarriage or stillbirth can have a range of after effects, including pain, bleeding, hormonal imbalances and psychological trauma (Cullen et al. 2018). Relationships can break down and longer-term mental ill-health can occur (Heazell et al. 2016; Murphy and Cacciatore 2017). Nationally there is an agreed pathway of support available for women and their partner who have experienced a miscarriage, stillbirth, neonatal death, or sudden infant death (NBCP 2018b). There is a multi-disciplinary multi-organisational group taking this work forward in Leeds.

Leeds has a specially designated Bereavement Midwife⁹, who can offer immediate and long term support to those affected by a miscarriage or stillbirth. The Maternity Strategy for Leeds also recognises that all staff should have training in the support of women experiencing a stillbirth or perinatal death (NHS 2015). In addition there is a bereavement support service for women from ethnic minorities provided by Haamla (Leeds Maternity Care 2018). In Leeds there is also the Stillbirth and Neonatal Death Society (SANDS) group that offers support to both parents (SANDS 2018), and a dedicated service offered by MindWell for parents who have lost a baby or young

⁹ <http://www.leedsth.nhs.uk/a-z-of-services/leeds-maternity-care/what-we-do/bereavement-support/>

child¹⁰, which also lists other organisations offering support and guidance to those affected by miscarriage and stillbirth.

The bereavement project has recently had an engagement event to seek the views of all those involved in the support of women and their partners following a death (Butters 2018), with the feedback from the day being used to help develop the service.

It is worth noting that a baby's death after 24 weeks allows the parents to have maternity, paternity or shared parental leave and pay to help get over the loss, if the death occurs before the 24th week any time off is classed as sick leave. However, it is important that women know that sick leave for a miscarriage may be protected in the same way as sick leave for a pregnancy-related illness, such that you are not limited in how much you can take and it must be recorded as such and does not count towards your overall sickness record (Working Families 2017). However, if a baby is below 24 weeks but takes a breath (NND) then the family will need to register the birth and death and should be entitled to the same maternity/paternity leave and benefits as those that have a stillbirth.

14.8 Breastfeeding

It is internationally recognised that there is a benefit to breastfeeding, including better infant health, better long term maternal health (including increased protection against breast and ovarian cancer), and improved relationship building with the child (Victora et al. 2016; Unicef 2019). The WHO and UNICEF recommend¹¹:

- Early initiation of breastfeeding within 1 hour of birth;
- Exclusive breastfeeding for the first 6 months of life; and
- Introduction of nutritionally-adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to 2 years of age or beyond.¹²

¹⁰ <https://www.mindwell-leeds.org.uk/myself/feeling-unwell/i-am-pregnant-or-a-new-parent/i-have-lost-a-baby-or-young-child>

¹¹ <https://www.who.int/en/news-room/fact-sheets/detail/infant-and-young-child-feeding>

¹² There is a useful video relating to this at: <https://www.unicef.org.uk/babyfriendly/about/call-to-action/>

Despite these advantages there is a recent acceptance by the Royal College of Midwives (RCM 2018) that ‘the decision of whether or not to breastfeed is a woman’s choice and must be respected’. Women who are not able to breastfeed can experience higher levels of stress and anxiety and face unhelpful stigma (Fallon et al. 2018; Símonardóttir and Gíslason 2018). UNICEF offer guidance on how best to promote and deliver responsive bottle feeding, and set out the importance of this approach if bottle-feeding is chosen as a method in terms of attachment and infant mental health¹³.

Across Leeds 73% of new mothers initiate breast feeding but this depends on locality, with this dropping to 65.5% in the more deprived areas of the city (the lowest rates of initiation of 40.6% within White British mothers) and rising to 86.2% in the most affluent areas of the city. (The same is seen for maintenance of breast feeding¹⁴, which stands at 48.5% across the city and below 40% in the deprived areas in the first quarter of 2018, as compared to over 60% in the not deprived areas -only 19.1% of White British mothers from the most deprived areas are still breastfeeding at this time point (Figure 3), which is a pattern reflected nationally (Simpson et al. 2019).

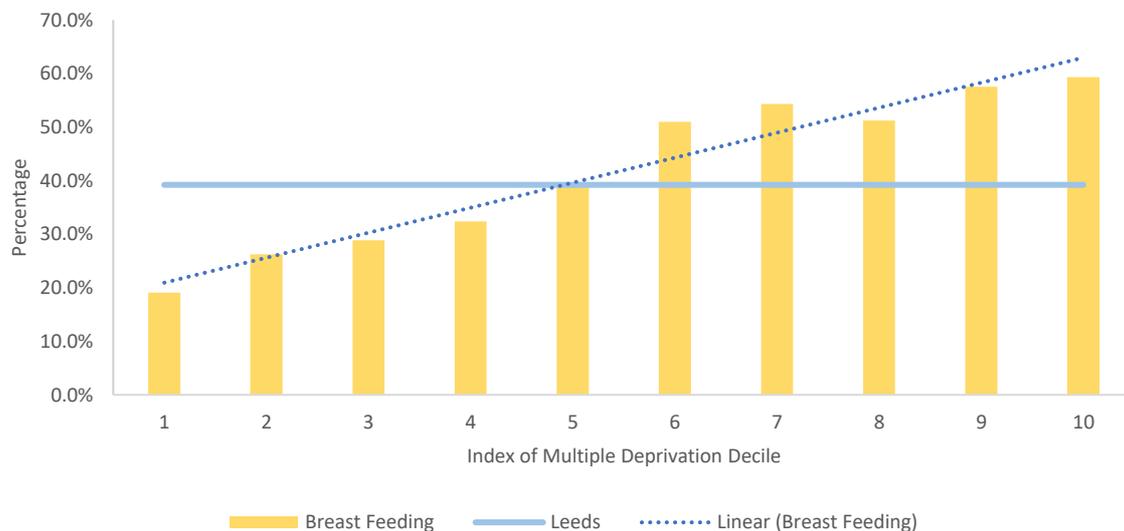


Figure 3 Breast Feeding at 6 to 8 week check, 2016/17 (White British), by deprivation

¹³ <https://www.unicef.org.uk/babyfriendly/wp-content/uploads/sites/2/2018/02/Infant-formula-and-responsive-bottle-feeding.pdf>

¹⁴ Which is defined as still breast feeding at 6 to 8 weeks

Women's Health Matters in Leeds ran a study exploring young, white, working-class mothers views on breastfeeding (WHM 2010). The study found that they needed targeted personal support to help them both initiate breastfeeding and also to continue. They found issues relating to the women's confidence in asking for information and support, and their ability to understand current advice and guidance.

The Leeds Breastfeeding Plan 2016-2021 (Best Start Strategy Group 2016) recognises the importance of breast feeding, and there has been a national push for mothers to breast feed. The intention is to support mothers and fathers, such that breast feeding can be initiated and continued, with a reduction in the gap between the deprived and non-deprived areas of Leeds for breast feeding rates. This plan is seeing an increase in the number of businesses and venues across Leeds signing up to be Breastfeeding friendly¹⁵, with support for breast feeding mothers to return to work.

Leeds runs a breast feeding peer support service, which operates to give local women a forum for meeting other mothers who are breastfeeding (Leeds City Council and NHS Leeds 2018). These run in different localities across the city and on different days, so support is available all week if needed.

A trial, conducted in Sheffield and surrounding areas, of giving breastfeeding mothers vouchers was found to be successful in motivating those mothers who wished to breast feed until 6 months. For those mothers who were not in favour of breastfeeding the initiative did not increase up-take. There was, however a feeling amongst the women that this scheme could raise awareness of breastfeeding and encourage its normalisation (Johnson et al. 2018).

14.9 Long term physical effects of pregnancy and childbirth

Pregnancy and childbirth can exert a significant toll on a woman's body, which can affect their health and wellbeing well after the child has grown up. This was raised in the Women's Voices study (Thomas and Warwick-Booth 2018):

¹⁵ <https://familyinformation.leeds.gov.uk/professionals/breastfeeding-friendly>

“I had three kids you know I- my anatomy is not what it was before I had them, and I- it’s only when you- only maybe takes one or two women, to start speaking openly about, what’s going on down there, you know for other people to go “oh actually you know for ten years I’ve had this but I didn’t wanna mention it...”

Many of the problem’s women experience post pregnancy, including prolapse and incontinence can be reduced through greater pelvic floor education, including support for exercises and a more proactive approach to protecting the pelvic floor during the birth. The Leeds Teaching Hospitals have an aim to reduce Obstetric Anal Sphincter Injuries (OASI) by 50% within one year through ensuring all practitioners have undertaken the PEACHES¹⁶ and episiotomy training and there is an ambition within the NHS long-term plan to improve access to postnatal physiotherapy, which should contribute to improved care in this area. The Women’s Institute (TheWI 2018) is campaigning to ensure women have greater awareness of what is normal and what can be improved through treatment and access to specialist practitioners.

In Leeds there is campaign being launched soon in relation to pelvic floor exercises and healthy food and nutrition during pregnancy in Leeds in conjunction with ‘Best Beginnings’¹⁷, which also links to the Baby Buddy App and Express Magazine¹⁸.

14.9.1 Haemorrhoids, anal fissures and constipation

It is estimated that 2/3^{rds} of pregnant women will have some form of anal symptoms during their pregnancy and as a result of childbirth, including haemorrhoids, anal fissures and constipation. They are a common cause of pain and discomfort during pregnancy, and for some women they do not resolve so can be a continuing case of distress (Poskus et al. 2014; Åhlund et al. 2018; Ferdinande et al. 2018). There is a

¹⁶ PEACHES: **P**osition (birthing position can have an impact on stress to the perineum) **E**xtra midwife (present at birth), **A**ssess the perineum (throughout), **C**ommunication **H**ands-on technique, **E**pisiotomy if required, **S**lowly

¹⁷ <https://www.bestbeginnings.org.uk/news/embedding-with-leeds-maternity-care>

¹⁸ <https://familyinformation.leeds.gov.uk/families/baby-buddy>

national organisation (MASIC¹⁹) now working to reduce damage to the anal sphincter and to support affected women.

14.9.2 Urinary and bowel leakage / incontinence

It is estimated over 5 million women over the age of 20 years are affected by stress urinary incontinence, overactivity of the bladder (+/- urgency urinary incontinence) or voiding dysfunction with resultant overflow incontinence, mostly as a result of childbirth (Davies 2015).

14.9.3 Pelvic organ prolapse

Pelvic organ prolapse is the downward descent of the female pelvic organs (vagina, uterus, bladder, and/or rectum) into or through the vagina, and is thought to affect about one in 12 women living in the UK (Barber 2016). Although this is mostly as a result of pregnancy the effects are often not seen until after the menopause and can often occur alongside other pelvic floor problems such as incontinence.

“Prolapse and incontinence affect women’s sex lives and relationships and cost the health service and individuals millions of pounds each year in pads, catheters, medication and other treatments ... This is morbidity, not mortality, but the number of women affected is enormous. Because these subjects are still taboo, greater public awareness is needed to empower women to access self-help resources and treatment pathways” (p15) (Davies 2015)

There is currently an investigation into the use of a surgical mesh that has been widely used as a treatment for incontinence and prolapse of the uterus. The mesh has been found to cause excruciating pain and long term health problems and has been the cause of fatalities as a result of sepsis. It is estimated that over 100,000 women have had the mesh fitted, with around 10% very badly affected. This has been debated in Parliament (House of Commons 2018) and there is now a

¹⁹ <https://masic.org.uk/>

suspension of its routine use. It is not known how many women are affected in Leeds.

The preferred approach to management is through a better awareness of pelvic floor strengthening before pregnancy and pelvic floor muscle training both during and after pregnancy, which has a positive effect on all pelvic floor conditions (Moosdorff-Steinhauser et al. 2015; Barber 2016; Hagen et al. 2017).

14.10 Perinatal mental health

During pregnancy and in the first year after birth, women can experience a range of mental health problems. These problems are collectively termed 'perinatal mental illnesses', and are estimated to affect between 10 - 20% of all women in the perinatal period (Hogg, 2013).

It is estimated that nationally, perinatal depression, anxiety and psychosis cost £8.1 billion for each one year cohort of births – with nearly 72% of this cost related to the adverse impact upon the child (Bauer et al. 2014). Perinatal mental illness remains a significant cause of maternal death (Draper et al. 2018). Perinatal mental illness can also have important and far-reaching effects on babies and children, with the causal pathways that lead to poor outcomes not straightforward, involving both direct and indirect factors (Hogg, 2013).

Whilst there has been a significant focus upon post-natal depression, there is increasing recognition that the whole of the perinatal period is a time during which women may experience a range of mental health disorders. Rates of anxiety disorders in the postpartum period have been shown to be at least as prevalent as depression (Hogg 2013; Fairbrother et al. 2016). There is also a risk of post-traumatic stress disorder in women (and men) associated with birth, especially if the birth has been traumatic (James 2015; Zerach and Magal 2017). However, in practice, the range and prevalence of anxiety disorders (including generalised anxiety disorder, obsessive-compulsive disorder, panic disorder, phobias, post-traumatic stress disorder and social anxiety disorder) and depression are under-

recognised throughout pregnancy and the postnatal period, with many women and men not receiving treatment (NICE, 2014).

Risk factors for antenatal anxiety and depression include: a lack of partner or of social support; history of abuse or of domestic violence; personal history of mental illness; un-planned or unwanted pregnancy; adverse events in life and high perceived stress, present/past-pregnancy complications and pregnancy loss (Biaggi et al. 2016).

Risks of both ante and postnatal depression are higher in women who are obese (Steinig et al. 2017), in younger women (Reid and Meadows-Oliver 2007; Hogg 2013), in women who have pre-existing mental health disorders such as bipolar disorder, and in those who have experienced a previous perinatal psychosis or post-partum depressive episode (Di Florio et al. 2018). Postnatal depression in particular has been shown to have far-reaching and long lasting effects on both mothers and their children (Myers and Johns 2018)

Men are now recognised as 'at risk' of postnatal depression (Smith et al. 2013; Tuszyńska-Bogucka and Nawra 2014; Edward et al. 2015; Zerach and Magal 2017). This has implications not only for men, but for women and families. Men and same sex partners are vital to the wellbeing of mothers in the perinatal period-functioning as both protective and risk factors for maternal and infant wellbeing (Biaggi et al. 2016).

There are a wide range of interventions that are designed to reduce the risk or impact of perinatal mental illness. These include peer support, community-based interventions, talking therapies (such as those provided by IAPT) and intensive psychiatric/psychological treatment delivered both in the community and via in-patient settings by perinatal mental health services and Mother and Baby Units.

NICE guidance recommends screening for current and previous mental health disorders at the first maternity booking appointment (NICE, 2014). For treatment of anxiety and depression NICE recommends facilitated self-help or talking therapies. Cognitive Behavioural Therapy has the strongest evidence base for the prevention

and treatment of mild perinatal anxiety and depression (Easter et al. 2015). However, web-based interventions show promise in reducing depressive symptoms (Lee et al. 2016) and Mindfulness Based Interventions (MBI) have been shown to lead to significant reductions in perinatal anxiety, and moderate, if less consistent efficacy in reducing depressive symptoms in the perinatal period (Shi and MacBeth 2017).

For women with more serious or complex mental health disorders, intensive, structured psychological therapy (including talking therapies) is recommended, alongside management with medications (NICE, 2014).

Community based and/or peer interventions can also provide significant support for women and families. A randomised control trial of offering lay support to women with a social risk of poor psychological health through pregnancy (Kenyon et al. 2016b), found that in women with two or more risk factors their mental health was significantly better than the control. It also resulted in improved mother-to-infant bonding.

Public Health England(PHE 2018e) has produced the following estimates of numbers of women in Leeds who may experience different types of mental health disorders in the perinatal period, over the course of one year (Table 1). The analysis applies population estimates of mental health disorders to the local birth rate in Leeds. Women may have more than one illness, so may be counted twice.

Table 1 Public Health England Perinatal Mental Health Population Estimates: Leeds (2016)

Estimated number of women with postpartum psychosis	20
Estimated number of women with chronic SMI	20
Estimated number of women with severe depressive illness	290
Estimated number of women with mild-moderate depressive illness and anxiety (lower estimate)	955
Estimated number of women with mild-moderate depressive illness and anxiety (upper estimate)	1,430
Estimated number of women with PTSD	290
Estimated number of women with adjustment disorders and distress (lower estimate)	1,430
Estimated number of women with adjustment disorders and distress (upper estimate)	2,860

It is possible that these nationally derived estimates for perinatal mental ill health underestimate levels of need in Leeds as they are not adjusted for deprivation (Erskine 2017).

Local and national data regarding mental health service use and perinatal mental health is limited. In part, this is due to the fact that within IAPT, there is no current national mandate to record whether a woman is pregnant or is accessing the service in the 12 months postpartum. Recording in Primary Care records is also inconsistent. Work is ongoing to 'link up' the national mental health service data set (which records acute care episodes) and the maternity data set.

14.11 Maternal and child nutrition

Having the right nutrition before and through pregnancy and during early life can have a marked impact on the health and wellbeing of both mother and child.

The Leeds Maternal and Child Nutrition Health Needs Assessment (Moore 2016) notes that there has been a general trend in healthier diets and more awareness of the need for supplements for women before and during pregnancy. However, it also recognises that some groups of women are still at risk of low intakes of the micronutrients necessary for a healthy baby. It is mostly young mothers that are most at risk of having diets below the recommended intakes of iron, fibre, oily fish, red meats, folic acid, calcium, Vitamins A and D and higher than recommended intakes of sugar, fat and alcohol.

Those women of childbearing age who are an unhealthy weight (both underweight and overweight) were found to be at risk of having below recommended intakes of dietary fibre, oily fish, fruit and vegetables, low level supplement use of folic acid and Vitamin D.

The health needs assessment calls for a greater role out of the Health Eating Nutrition for the Really Young (HENRY) training programme to all those groups and

individuals who work with vulnerable families to help improve early life development. This is being offered in Leeds as part of Public Health priority based training²⁰ .

A study on infant feeding in the Gypsy and Traveller community in Bristol (Condon and Salmon 2015) found that it was important to work carefully with the community to ensure culturally sensitive health promotion was provided. In Leeds, Haamla (Leeds Maternity Care 2018) provides a weekly drop-in clinic at the Cottingley Springs site and there is a specialist maternity pathway for Gypsy and Traveller women (Erskine 2014).

References

- Åhlund S, Rådestad I, Zwedberg S, et al (2018) Haemorrhoids - a neglected problem faced by women after birth. *Sex Reprod Healthc*. doi: 10.1016/j.srhc.2018.08.002
- Bakbakhi D, Burden C, Storey C, Siassakos D (2017) Care following stillbirth in high-resource settings: Latest evidence, guidelines, and best practice points. *Semin Fetal Neonatal Med* 22:161–166. doi: 10.1016/j.siny.2017.02.008
- Barber MD (2016) Pelvic organ prolapse. *BMJ* 354:1–9. doi: 10.1136/bmj.i3853
- Barker M, Dombrowski SU, Colbourn T, et al (2018) Intervention strategies to improve nutrition and health behaviours before conception. *Lancet* 1853–1864. doi: 10.1016/S0140-6736(18)30313-1
- Bauer A, Parsonage M, Knapp M, et al (2014) The costs of perinatal mental health problems. Centre for Mental Health & London School of Economics, London
- Bennett S (2016) Engagement Report: Women with learning difficulties who have experienced pregnancy in Leeds. Leeds Maternity Care, NHS, Leeds
- Bennett S (2018) An evaluation of the Leeds integrated maternity care pathway for pregnant women with learning disability/learning difficulty/autism. Leeds Teaching Hospitals Trust, Leeds
- Bennett S, Southby K (2018) A new pathway to parenthood. *Midwives Winter*:49–51.
- Best Start Strategy Group (2016) Leeds Breastfeeding Plan. Leeds City Council and NHS Leeds, Leeds
- Biaggi A, Conroy S, Pawlby S, Pariante CM (2016) Identifying the women at risk of antenatal anxiety and depression: A systematic review. *J Affect Disord* 191:62–77. doi: 10.1016/j.jad.2015.11.014
- Broadhurst K, Mason C, Bedston S, et al (2017) Vulnerable Birth Mothers and Recurrent Care Proceedings Final Main Report. Centre for Child and Family Justice, Lancaster University, Lancaster
- Butters H (2018) Bereavement in Maternity Services. NHS Leeds, Clinical Commissioning Group, Leeds
- Condon LJ, Salmon D (2015) “You likes your way, we got our own way”: Gypsies and Travellers’ views on infant feeding and health professional support. *Heal Expect* 18:784–795. doi: 10.1111/hex.12214
- Cullen S, Coughlan B, McMahon A, et al (2018) Parents’ experiences of clinical care

²⁰ <https://www.leeds.gov.uk/phrc/public-health-training/public-health-priority-based-training>

- during second trimester miscarriage. *Br J Midwifery* 26:309–315. doi: 10.12968/bjom.2018.26.5.309
- Davies S (2015) Annual Report of the Chief Medical Officer, 2014: The Health of the 51%: Women. Department of Health, London
- Dean S V., Lassi ZS, Imam AM, Bhutta ZA (2014) Preconception care: Nutritional risks and interventions. *Reprod Health* 11:0–15. doi: 10.1186/1742-4755-11-S3-S3
- Di Florio A, Gordon-Smith K, Forty L, et al (2018) Stratification of the risk of bipolar disorder recurrences in pregnancy and postpartum. *Br J Psychiatry* 1–6. doi: 10.1192/bjp.2018.92
- Draper E, Gallimore I, Kurinczuk J, et al (2018) MBRRACE-UK Perinatal Mortality Surveillance Report. The Infant Mortality and Morbidity Studies, Department of Health Sciences, University of Leicester, Leicester
- Easter A, Howells H, Pawlby S (2015) Talking therapies for mild perinatal anxiety and depression.
- Edward K-L, Castle D, Mills C, et al (2015) An integrative review of paternal depression. *Am J Mens Health* 9:26–34. doi: 10.1177/1557988314526614
- Erskine S (2014) Leeds Maternity Health Needs Assessment 2014. Leeds City Council, Leeds
- Erskine S (2017) Leeds Perinatal Mental Health Needs Assessment. Leeds City Council, Leeds
- Fairbrother N, Janssen P, Antony MM, et al (2016) Perinatal anxiety disorder prevalence and incidence. *J Affect Disord* 200:148–155. doi: 10.1016/j.jad.2015.12.082
- Fallon V, Halford JCG, Bennett KM, Harrold JA (2018) Postpartum-specific anxiety as a predictor of infant-feeding outcomes and perceptions of infant-feeding behaviours: new evidence for childbearing specific measures of mood. *Arch Womens Ment Health* 21:181–191. doi: 10.1007/s00737-017-0775-0
- Ferdinande K, Dorreman Y, Roelens K, et al (2018) Anorectal symptoms during pregnancy and postpartum: a prospective cohort study. *Color Dis* 1–8. doi: 10.1111/codi.14324
- Fleming TP, Watkins AJ, Velazquez MA, et al (2018) Origins of lifetime health around the time of conception: causes and consequences. *Lancet* 391:1842–1852. doi: 10.1016/S0140-6736(18)30312-X
- FSRH (2017) FSRH Guideline Contraception After Pregnancy. Faculty of Sexual and Reproductive Healthcare, London
- Hagen S, Glazener C, McClurg D, et al (2017) Pelvic floor muscle training for secondary prevention of pelvic organ prolapse (PREVPROL): a multicentre randomised controlled trial. *Lancet* 389:393–402. doi: 10.1016/S0140-6736(16)32109-2
- Heazell AEP, Siassakos D, Blencowe H, et al (2016) Stillbirths: Economic and psychosocial consequences. *Lancet* 387:604–616. doi: 10.1016/S0140-6736(15)00836-3
- Heller R, Cameron S, Briggs R, et al (2016) Postpartum contraception: A missed opportunity to prevent unintended pregnancy and short inter-pregnancy intervals. *J Fam Plan Reprod Heal Care* 42:93–98. doi: 10.1136/jfprhc-2014-101165
- Hemsing N, Greaves L, Poole N (2017) Preconception health care interventions: A scoping review. *Sex Reprod Healthc* 14:24–32. doi: 10.1016/j.srhc.2017.08.004
- Hogg S (2013) Prevention in mind - All Babies Count: Spotlight on Perinatal Mental

- Health. NSPCC, London
- House of Commons (2018) Surgical Mesh. In: Hansard.
<https://hansard.parliament.uk/commons/2018-04-19/debates/C5B94EB2-2398-4F0E-BE9E-D502ACEBFA62/SurgicalMesh>.
- James S (2015) Women's experiences of symptoms of posttraumatic stress disorder (PTSD) after traumatic childbirth: a review and critical appraisal. *Arch Womens Ment Health* 18:761–771. doi: 10.1007/s00737-015-0560-x
- Johnson M, Whelan B, Relton C, et al (2018) Valuing breastfeeding: a qualitative study of women's experiences of a financial incentive scheme for breastfeeding. *BMC Pregnancy Childbirth* 1–9. doi: 10.1186/s12884-017-1651-7
- Kenyon S, Jolly K, Hemming K, et al (2016) Lay support for pregnant women with social risk: A randomised controlled trial. *BMJ Open* 6:1–8. doi: 10.1136/bmjopen-2015-009203
- King JC (2016) A Summary of Pathways or Mechanisms Linking Preconception Maternal Nutrition with Birth Outcomes. *J Nutr* 146:1437S–1444S. doi: 10.3945/jn.115.223479
- Knight M, Kenyon S, Brocklehurst P, et al (2014) Saving Lives, Improving Mothers' Care - Lessons learned to inform future maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009--12. MBRACE-UK, National Perinatal Epidemiology Unit, University of Oxford, Oxford
- Lassi ZS, Imam AM, Dean S V, Bhutta ZA (2014) Preconception care: caffeine, smoking, alcohol, drugs and other environmental chemical / radiation exposure. 11:1–12.
- Lee EW, Denison FC, Hor K, Reynolds RM (2016) Web-based interventions for prevention and treatment of perinatal mood disorders: A systematic review. *BMC Pregnancy Childbirth*. doi: 10.1186/s12884-016-0831-1
- Lee L, McKenzie-McHarg K, Horsch A (2017) The impact of miscarriage and stillbirth on maternal–fetal relationships: an integrative review. *J Reprod Infant Psychol* 35:32–52. doi: 10.1080/02646838.2016.1239249
- Leeds City Council (2017a) Futures: Post Removal Support Service. Leeds City Council, Leeds
- Leeds City Council (2017b) Leeds Practice Model. Leeds City Council, Leeds
- Leeds City Council and NHS Leeds (2018) Breastfeeding Groups and Support in Leed. [https://www.leeds.gov.uk/docs/Breastfeeding support groups.pdf](https://www.leeds.gov.uk/docs/Breastfeeding%20support%20groups.pdf). Accessed 17 Nov 2018
- Leeds Maternity Care (2018) Haamla Service. <http://www.leedsth.nhs.uk/a-z-of-services/leeds-maternity-care/what-we-do/haamla-service/>.
- Malouf R, McLeish J, Ryan S, et al (2017) “We both just wanted to be normal parents”: A qualitative study of the experience of maternity care for women with learning disability. *BMJ Open*. doi: 10.1136/bmjopen-2016-015526
- McCracken K, Priest S, Fitzsimons A, et al (2017) Evaluation of Pause. Department for Education, London
- Moore J (2016) Leeds Maternal and Child Nutrition Health Needs Assessment 2016. Leeds City Council, Leeds
- Moosdorff-Steinhauser HFA, Albers-Heitner P, Weemhoff M, et al (2015) Factors influencing postpartum women's willingness to participate in a preventive pelvic floor muscle training program: A web-based survey. *Eur J Obstet Gynecol Reprod Biol* 195:182–187. doi: 10.1016/j.ejogrb.2015.10.009
- Murphy S, Cacciatore J (2017) The psychological, social, and economic impact of

- stillbirth on families. *Semin Fetal Neonatal Med* 22:129–134. doi: 10.1016/j.siny.2017.02.002
- Murphy S, Jones KS (2014) By the way knowledge: Grandparents, stillbirth and neonatal death. *Hum Fertil* 17:210–213. doi: 10.3109/14647273.2014.930190
- Myers S, Johns SE (2018) Postnatal depression is associated with detrimental life-long and multi-generational impacts on relationship quality. *PeerJ* 6:e4305. doi: 10.7717/peerj.4305
- National Maternity Review (2016) Better births. Improving outcomes of maternity services in England. A five year forward view for maternity care. NHS England, London
- NBCP (2018) The five Bereavement Care Pathways. In: *Natl. Bereave. Care Pathw.* <http://www.nbcpathway.org.uk/pathways/>. Accessed 18 Nov 2018
- NHS (2015) Maternity Strategy for Leeds 2015-2020. Leeds South and East Clinical Commissioning Group, Leeds
- NHS (2016) Severe vomiting in pregnancy. <https://www.nhs.uk/conditions/pregnancy-and-baby/severe-vomiting-in-pregnancy-hyperemesis-gravidarum/>. Accessed 20 Nov 2018
- NHS Digital (2018) Compendium - Maternal mortality. <https://digital.nhs.uk/data-and-information/publications/clinical-indicators/compendium-of-population-health-indicators/compendium-mortality/current/maternal-mortality>.
- NICE (2014) Intrapartum care for healthy women and babies. National Institute for Health and Clinical Excellence, London
- ONS (2018a) Conceptions in England and Wales: 2016. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/conceptionandfertilityrates/bulletins/conceptionstatistics/2016>.
- ONS (2018b) Quarterly conceptions to women aged under 18 years, England and Wales.
- ONS (2018c) Mortality Statistics - underlying cause, sex and age: 2016. In: *nomis*. <https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=161>.
- ONS (2016) Births in England and Wales. Office for National Statistics, London
- Oteng-Ntim E, Tezcan B, Seed P, et al (2015) Lifestyle interventions for obese and overweight pregnant women to improve pregnancy outcome: a systematic review and meta-analysis. *Lancet* 386:S61. doi: 10.1016/S0140-6736(15)00899-5
- PHE (2016) Health matters: giving every child the best start in life. <https://www.gov.uk/government/publications/health-matters-giving-every-child-the-best-start-in-life/health-matters-giving-every-child-the-best-start-in-life>.
- PHE (2018) Perinatal Mental Health. <https://fingertips.phe.org.uk/profile-group/mental-health/profile/perinatal-mental-health/data#page/13/gid/1938132960/pat/6/par/E12000003/ati/102/are/E08000035>. Accessed 4 Dec 2018
- Poskus T, Buzinskiene D, Drasutiene G, et al (2014) Haemorrhoids and anal fissures during pregnancy and after childbirth: A prospective cohort study. *BJOG An Int J Obstet Gynaecol* 121:1666–1671. doi: 10.1111/1471-0528.12838
- RCM (2018) RCM publishes new position statement on infant feeding. <https://www.rcm.org.uk/news-views-and-analysis/news/rcm-publishes-new-position-statement-on-infant-feeding>.
- RCOG (2015) Best practice in postpartum family planning. The Royal College of Obstetricians and Gynaecologists, London

- RCP (2016) Perinatal mental health services. Recommendations for the provision of services for childbearing women. Royal College of Psychiatrists, London
- Reid V, Meadows-Oliver M (2007) Postpartum Depression in Adolescent Mothers: An Integrative Review of the Literature. *J Pediatr Heal Care* 21:289–298. doi: 10.1016/j.pedhc.2006.05.010
- SANDS (2018) Stillbirth and Neonatal Death Society (SANDS). <https://leedsdirectory.org/service-provider/stillbirth-and-neonatal-death-society-sands/>.
- Shi Z, MacBeth A (2017) The Effectiveness of Mindfulness-Based Interventions on Maternal Perinatal Mental Health Outcomes: a Systematic Review. *Mindfulness (N Y)* 8:823–847. doi: 10.1007/s12671-016-0673-y
- Simonardóttir S, Gíslason I V. (2018) When breast is not best: Opposing dominant discourses on breastfeeding. *Sociol Rev* 66:665–681. doi: 10.1177/0038026117751342
- Simpson DA, Quigley MA, Kurinczuk JJ, Carson C (2019) Twenty-five-year trends in breastfeeding initiation: The effects of sociodemographic changes in Great Britain, 1985-2010. *PLoS One* 14:1–15. doi: 10.1371/journal.pone.0210838
- Smith HR, Eryigit-Madzwamuse S, Barnes J (2013) Paternal Postnatal and Subsequent Mental Health Symptoms and Child Socio-Emotional and Behavioural Problems at School Entry. *Infant Child Dev* 22:335–348.
- Squiers L, Mitchell EW, Levis DM, et al (2013) Consumers' perceptions of preconception health. *Am J Heal Promot* 27:S10-19. doi: 10.4278/ajhp.120217-QUAL-95
- Steinig J, Nagl M, Linde K, et al (2017) Antenatal and postnatal depression in women with obesity: a systematic review. *Arch Womens Ment Health* 20:569–585. doi: 10.1007/s00737-017-0739-4
- Stephenson J, Heslehurst N, Hall J, et al (2018) Preconception health: 1 Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health. *Lancet* 391:1830–1841. doi: 10.1016/S0140-6736(18)30311-8
- TheWI (2018) Pelvic floor education Resolution Shortlist Briefing Notes Pelvic floor education. The Women's Institute, London
- Thomas C, Warwick-Booth L (2018) The State of Women's Health in Leeds: Women's Voices 2018. Leeds Beckett University, Leeds
- Thompson EL, Vázquez-Otero C, Vamos CA, et al (2017) Rethinking Preconception Care: A Critical, Women's Health Perspective. *Matern Child Health J* 21:1147–1155. doi: 10.1007/s10995-016-2213-8
- Trandafir L-M, Chiriac MI, Teslaru O, et al (2016) Aspects of contraception and reproductive health in obese adolescent girls. *Asp PRIVIND CONTRACEPȚIA ȘI SĂNĂTATEA Reprod LA Adolesc OBEZE* 65:258–308.
- Tuszyńska-Bogucka W, Nawra K (2014) Paternal postnatal depression - A review. *Arch Psychiatry Psychother* 16:61–69. doi: 10.12740/APP/26286
- Unicef (2019) Benefits of breastfeeding. <https://www.unicef.org.uk/babyfriendly/about/benefits-of-breastfeeding/>. Accessed 25 Feb 2019
- VAL (2018) Homebirth Engagement: Assessment of Equality Impact and Engagement Report. Voluntary Action Leeds – Leeds Voices Team, Leeds
- van Dijk MR, Oostingh EC, Koster MPH, et al (2017) The use of the mHealth program Smarter Pregnancy in preconception care: Rationale, study design and data collection of a randomized controlled trial. *BMC Pregnancy Childbirth* 17:1–7. doi: 10.1186/s12884-017-1228-5

- Victora CG, Bahl R, Barros AJD, et al (2016) Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. *Lancet* 387:475–490. doi: 10.1016/S0140-6736(15)01024-7
- WHM (2010) Young, white, working class and breastfeeding in Leeds: My influences, my choices. *Women's Health Matters*, Leeds, Leeds
- Wonch Hill P, Cacciatore J, Shreffler KM, Pritchard KM (2017) The loss of self: The effect of miscarriage, stillbirth, and child death on maternal self-esteem. *Death Stud* 41:226–235. doi: 10.1080/07481187.2016.1261204
- Working Families (2017) Miscarriage, stillbirth and neonatal death – your rights at work and to benefits. <https://www.workingfamilies.org.uk/articles/miscarriage-stillbirth-and-neonatal-death-your-rights-at-work/>.
- Zerach G, Magal O (2017) Exposure to stress during childbirth, dyadic adjustment, partner's resilience, and psychological distress among first-time fathers. *Psychol Men Masculinity* 18:123–133. doi: 10.1037/men0000048
- Zhu CS, Tan TC, Chen HY, et al (2018) Threatened miscarriage and depressive and anxiety symptoms among women and partners in early pregnancy. *J Affect Disord* 237:1–9. doi: 10.1016/j.jad.2018.04.012