

Maternal Weight Health Needs Assessment Kent and Medway

July 2019



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Introduction

Weight management is just one, but very important aspect of maternity care. The care of pregnant women is affected and determined in part by the weight of a pregnant women at the booking appointment. This appointment is the introduction to the maternity care of pregnant women and ideally takes place before 12 weeks 6 days gestation. What is evident from the information presented for analysis is that the pregnant women are getting heavier.

Key Findings

- There is some evidence to suggest that maternal obesity [BMI 30 and above] is increasing in Kent & Medway. Amongst those with a recorded BMI, 21.6% were obese in 2015. This increased to 22.7% in 2017.
- Across the Districts, maternal obesity rates at the time of booking are **higher** than the Kent and Medway average in Folkestone & Hythe, Swale and Medway.
- Of note obesity rates are similar regardless of a mother's age.
- Obesity rates are higher than the Kent and Medway average amongst black mothers, but lower amongst Asian mothers. A similar pattern is seen nationally.
- Methods for calculating BMI vary, not all women are weighed and not all women will be seen before 12 weeks 6 days. Nationally Black/African and other ethnic groups are most likely to attend for a late booking.
- There are variations in the timeframes and BMI levels as to when glucose tolerance testing is undertaken. Risk factors relate to NICE guidance, but studies suggest that these are too limited.
- The pathways of care for those women identified with a BMI 18.5 or less are varied
- BMI level for referral to a consultant obstetrician is variable and the BMI cut off is increasing
- Excess maternal weight is more likely to require a medicalised birth including caesarean section
- Midwives in general do not have dietary conversations with women who are acknowledged or identified as having excess weight at their booking appointment – information is presented through assorted apps or leaflets.
- There is no consistent offer to pregnant women about portion size or weight management
- Excess maternal weight impacts on maternal mental health, intention or initiation of breastfeeding
- The evidence of the impact of excess maternal weight on non-communicable disease in infants is overwhelming – indicating future health needs
- Health service costs are significantly higher amongst those receiving maternal care who have excess weight.

- During the writing of this needs assessment the RCOG produced new guidance on the care of women with obesity in pregnancy.¹ A recommendation suggests introducing weighing women in the third trimester. Maternity services should agree whether and when to do this in the third trimester.

| Key Recommendations

- All providers implement the NICE and RCOG guidelines in full.
- The commissioners agree, implement and monitor a consistent approach to the identification of BMI at booking, the methodology to calculate BMI, measurements for referral to other practitioners which considers an individual's ethnicity and age.
- Maternity service commissioners review and agree the times at which the testing for glucose tolerance is undertaken to ensure it considers the needs of overweight and obese women taking into consideration ethnicity and other risk factors which extend beyond the current NICE guidelines
- Maternity services providers implement RCOG guidance principle and ensure through a systematic audit that all facilities which are used to weigh women in pregnancy have appropriate scales and that these are regularly calibrated.
- Workforce workstream of the LMS to ensure support for all midwifery service staff to be skilled to have systematic prompt conversations about healthy eating and physical activity at all antenatal contacts.
- Maternity service commissioners to review the pathways of care which support those presenting as underweight in pregnancy, to offer a consistent approach, as currently this is variable including peri-natal mental health services, consultant obstetrician and dietician.
- Public health to lead the development of a whole system approach to preconception care. This could include:
 - messaging which promotes the use of and access to contraception to prevent pregnancy before excess weight gain has been lost
 - support in the development and utilisation of materials to raise awareness about the impact of excess weight on maternal and infant health before conception
 - utilising the opportunity to insert long acting reversible contraception as part of the care pathway following caesarean section²
- Public health maternity and NHS service commissioners to co-develop, establish and implement a whole system family-based approach pathway of care for weight management with a focus on dietary changes across the whole system.

¹ RCOG Guidance on the Care of women with obesity in pregnancy 2018
<https://obgyn.onlinelibrary.wiley.com/doi/epdf/10.1111/1471-0528.15386>

² FRSH [2017] CEU Clinical Guidance: Contraception After Pregnancy
<https://www.fsrh.org/documents/contraception-after-pregnancy-guideline-january-2017/>

- Co-commission [maternity and public health] a pilot programme with dedicated one to one advisers to provide pre-natal and antenatal support through behaviour change techniques in order to modify lifestyle and environmental factors. [Obesity in pregnancy is defined as a maternal BMI of 30 or more at booking]³

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³ CMACE 2010 'Maternal Obesity in the UK -findings from a national report'
<https://link.springer.com/article/10.1186%2Fs12889-017-4211-1>

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1. What is the issue? The impact of weight on pregnancy, maternal care and infant health

1.1 Pregnant women are getting heavier

The increasing prevalence of obesity is a national and global public health priority. It is seen across the life course from very early childhood. The numbers and proportion of pregnant women identifying as having excess weight [includes those who are classified as overweight, obese and morbidly obese] at the first antenatal visit as measured through calculation of their body mass index [BMI] has increased over the last decade. Local anecdotal information and observational studies has shown that women are at risk of gaining weight post pregnancy and unable to lose the weight gained in pregnancy before conceiving again. PHE⁴ commentary in 2016 on maternal obesity highlighted additional risks and healthcare needs associated with morbid obesity, [BMI 40 and over] in early pregnancy: highlighting longer post-natal stays in hospital, wound infections, and stillbirth.

NICE⁵ refer to research undertaken by Heslehurst and published in 2010 stating ‘that at the start of pregnancy 15.6% of women in England were obese.’⁶ In the same year the CMACE/RCOG⁷ highlighted that maternal obesity was associated with an increased risk of outcomes including miscarriage, neonatal death, venous thromboembolism, higher caesarean section rate and gestational diabetes.

There is some evidence to suggest that maternal obesity is increasing in Kent and Medway. In Kent amongst those with a recorded BMI at booking, 20.7% were classified as obese in 2015. This increased to 21.8% in 2017. In Medway amongst those with a recorded BMI at booking 25% were classified as obese in 2015. By 2017 this had increased to 27%. England increased from 20.1% to 21.2% over the same period. The retrospective study of pregnant women conducted by Heslehurst found 1.6% reported BMIs to be 40-49.9 and 0.2% 50 and above. Although not reported at these weight bands separately, in Kent and Medway the proportion of pregnant women identified with a BMI 40 and over in 2017 was 3%. This suggests that it is not just the prevalence of obesity which is increasing but the proportion of pregnant women identified as obese who are measured as morbidly obese.

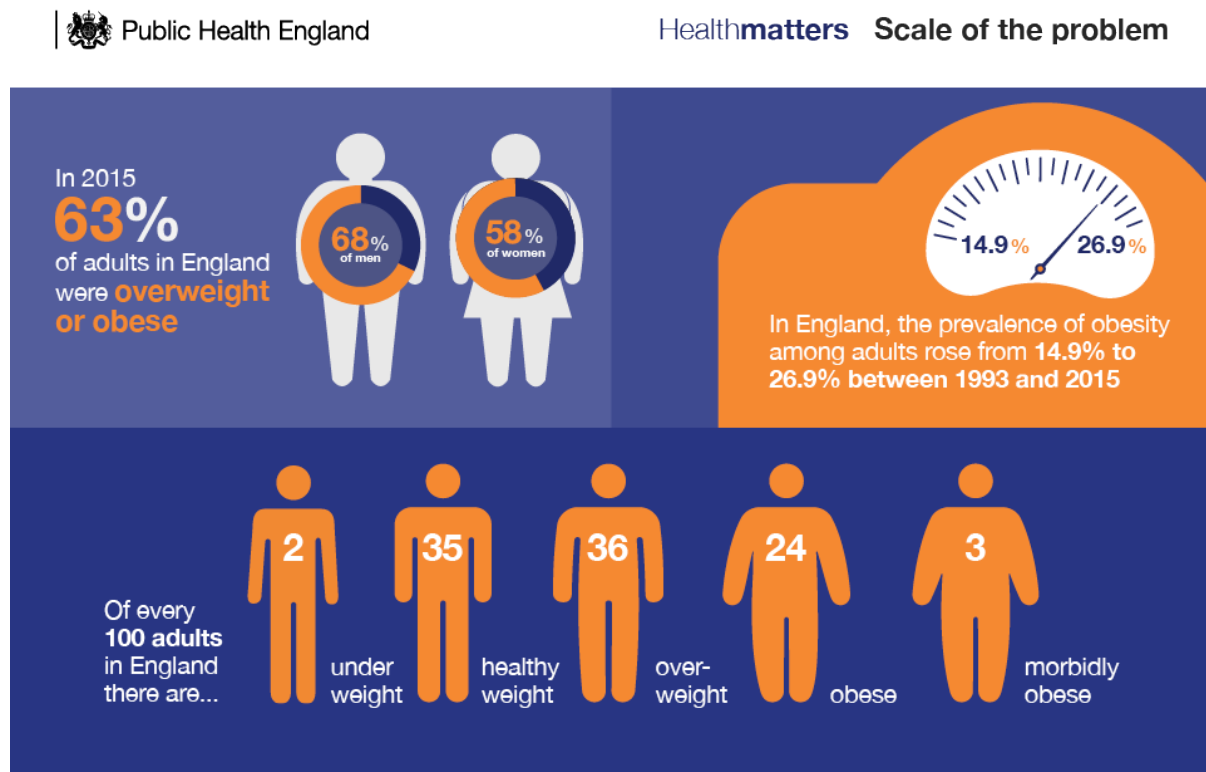
⁴ PHE Compilation of publications presented by PHE on maternal obesity on the now archived national obesity observatory https://khub.net/c/document_library/get_file?uuid=a5768682-fb3d-4fda-ab4a-937a8d80f855&groupId=31798783

⁵ NICE [2010] Weight management, before during and after pregnancy <https://www.nice.org.uk/guidance/ph27/resources/weight-management-before-during-and-after-pregnancy-pdf-1996242046405>

⁶ NICE [2010] Weight management before during and after pregnancy <https://www.nice.org.uk/guidance/ph27/chapter/2-Public-health-need-and-practice>

⁷ Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries. Management of women with obesity in pregnancy. Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries , 2010. <https://www.rcog.org.uk/globalassets/documents/guidelines/cmacercojointguidelinemanagementwomenobesitypregnancy.pdf>

Illustration 1: Scale of the problem

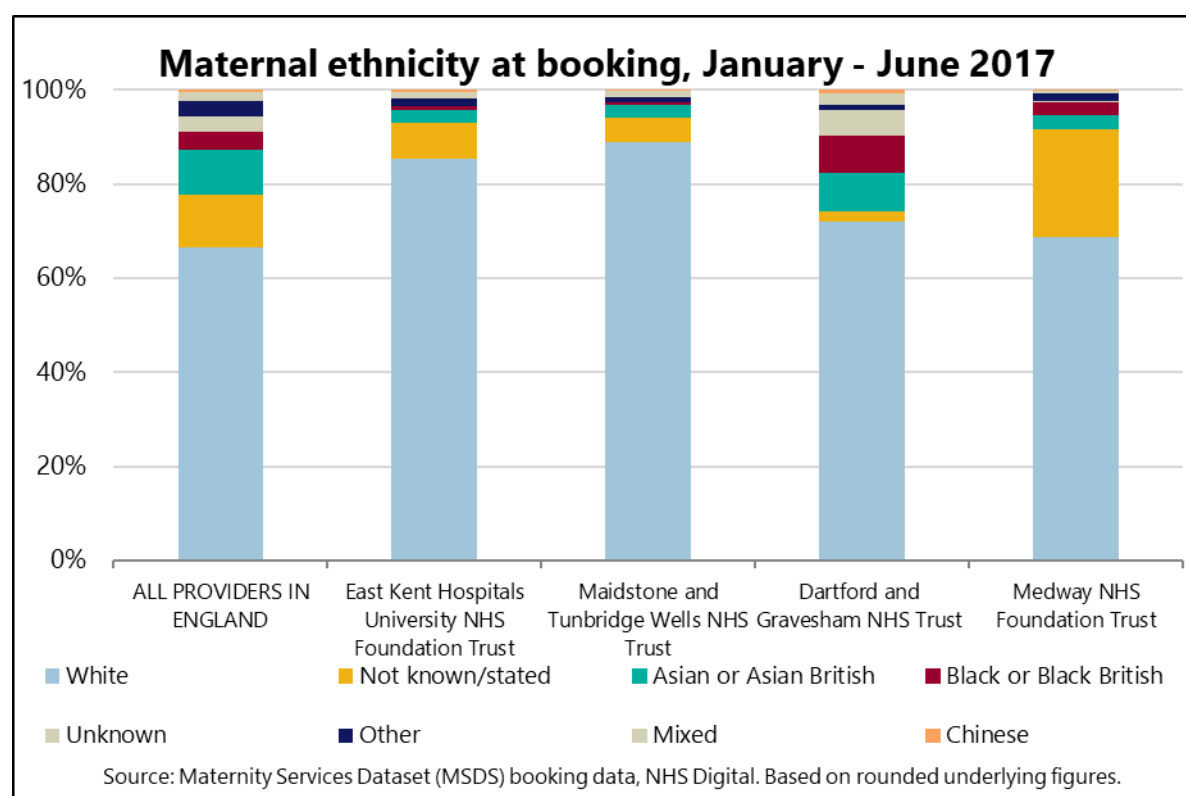


1.2 Population

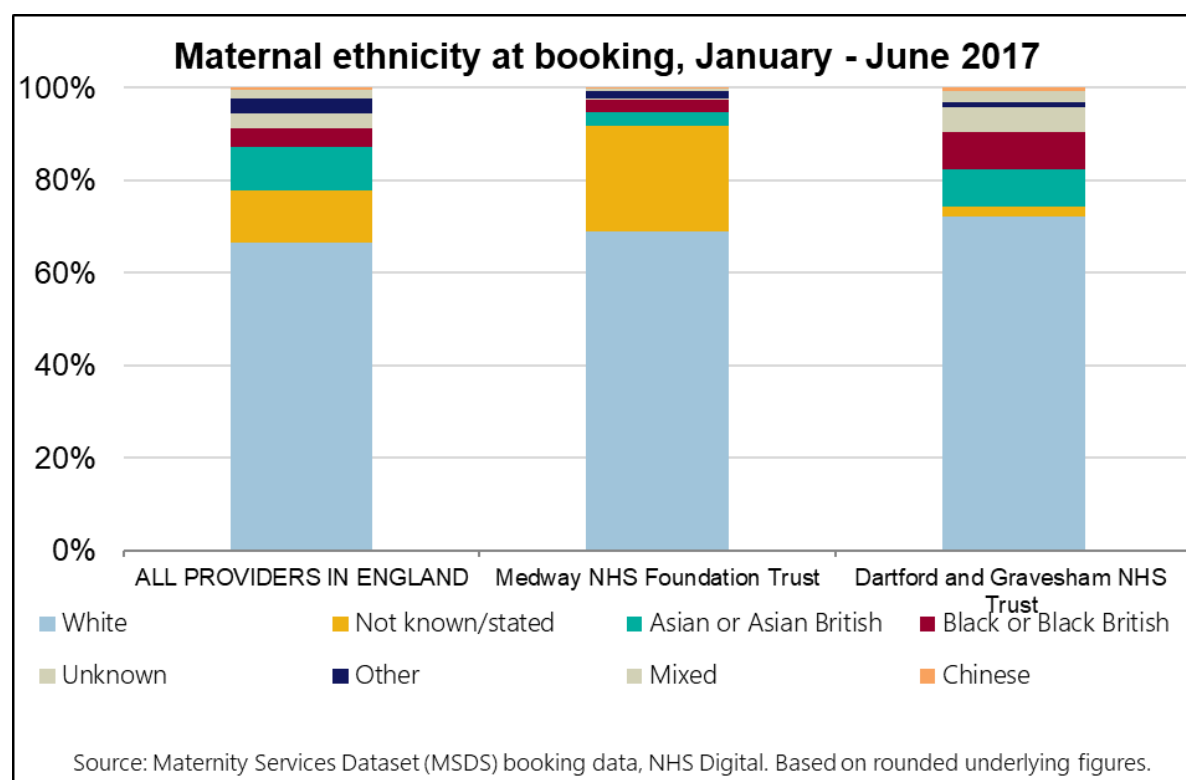
In 2017 the estimated resident female population in Kent aged 15 - 49 years was 333,200 and in Medway 64,200. Amongst the pregnant women in Kent and Medway in 2017, 23% were classified as obese that is approximately 1 in 5 pregnant women.

The following graphs illustrate the demographic makeup of the recent pregnant population by NHS trust.

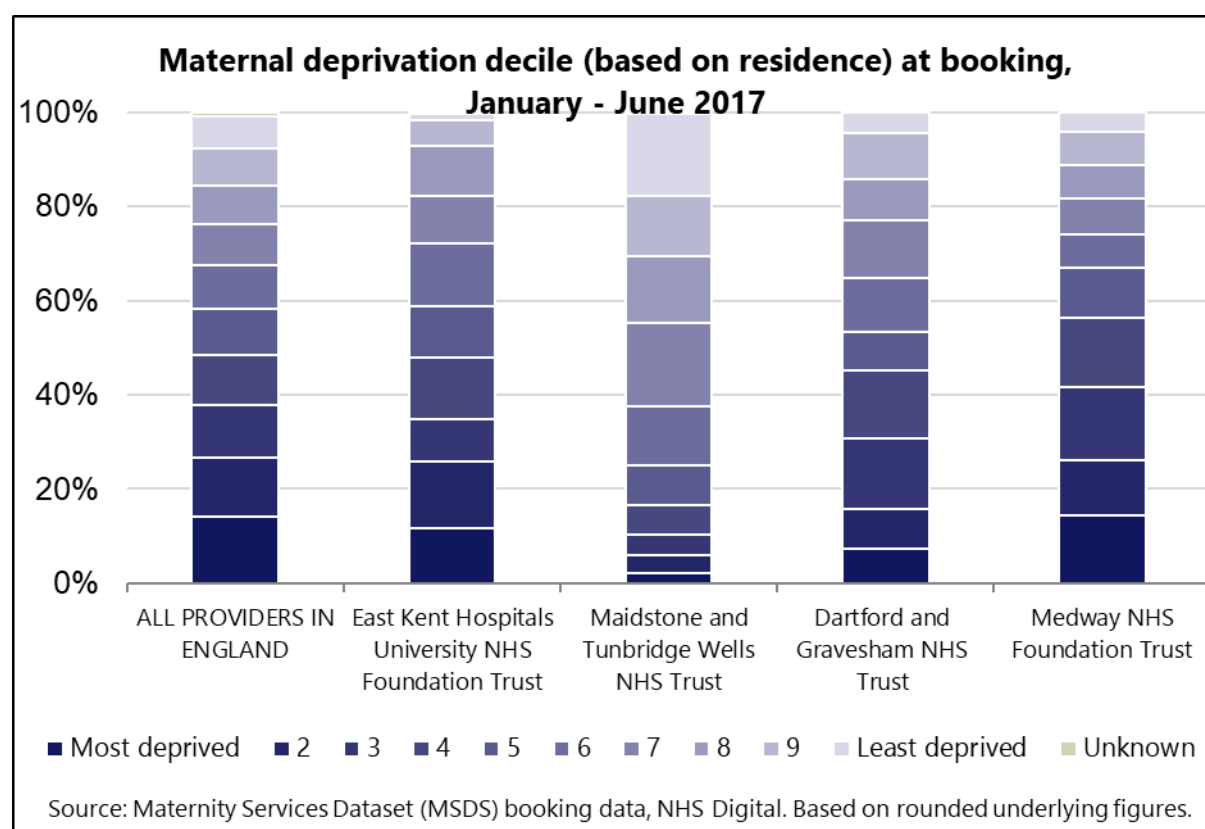
Graph 1: Ethnicity of maternal Kent residents, January – June 2017



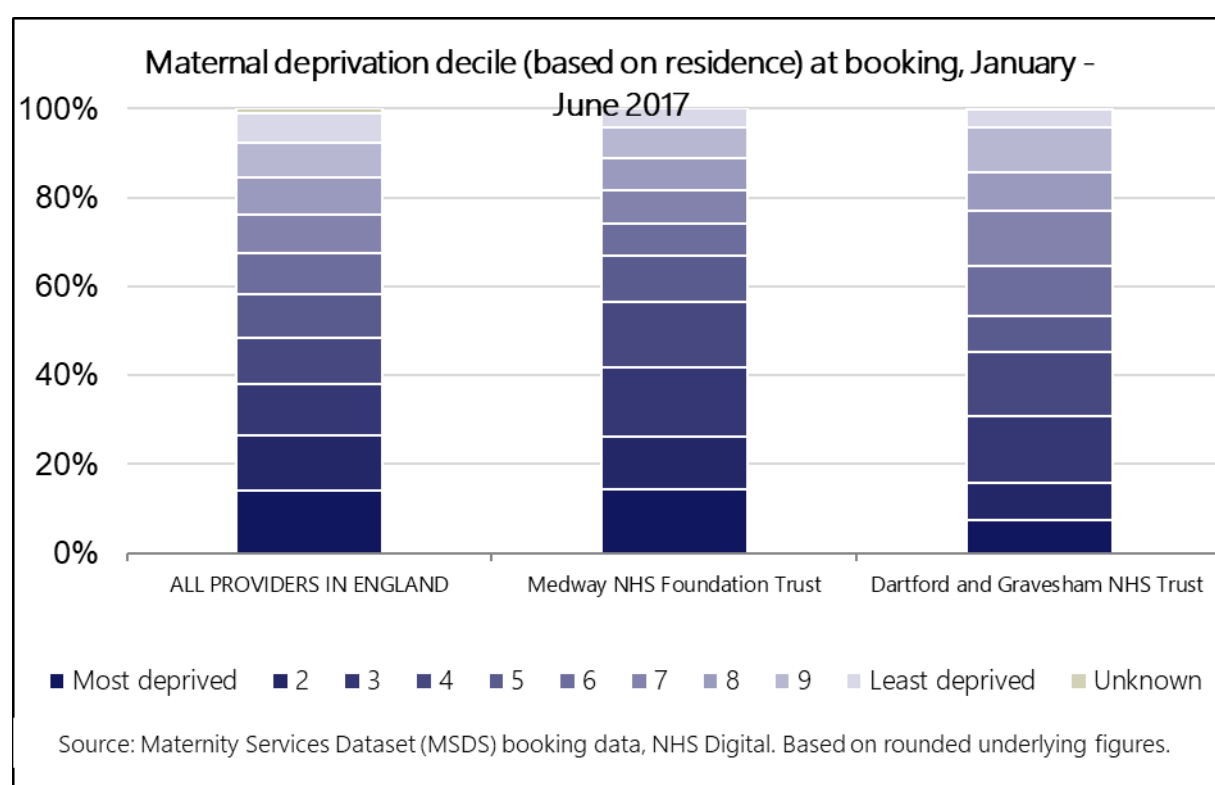
Graph 2: Ethnicity of maternal Medway residents, January – June 2017



Graph 3: Maternal deprivation Kent residents, January – June 2017

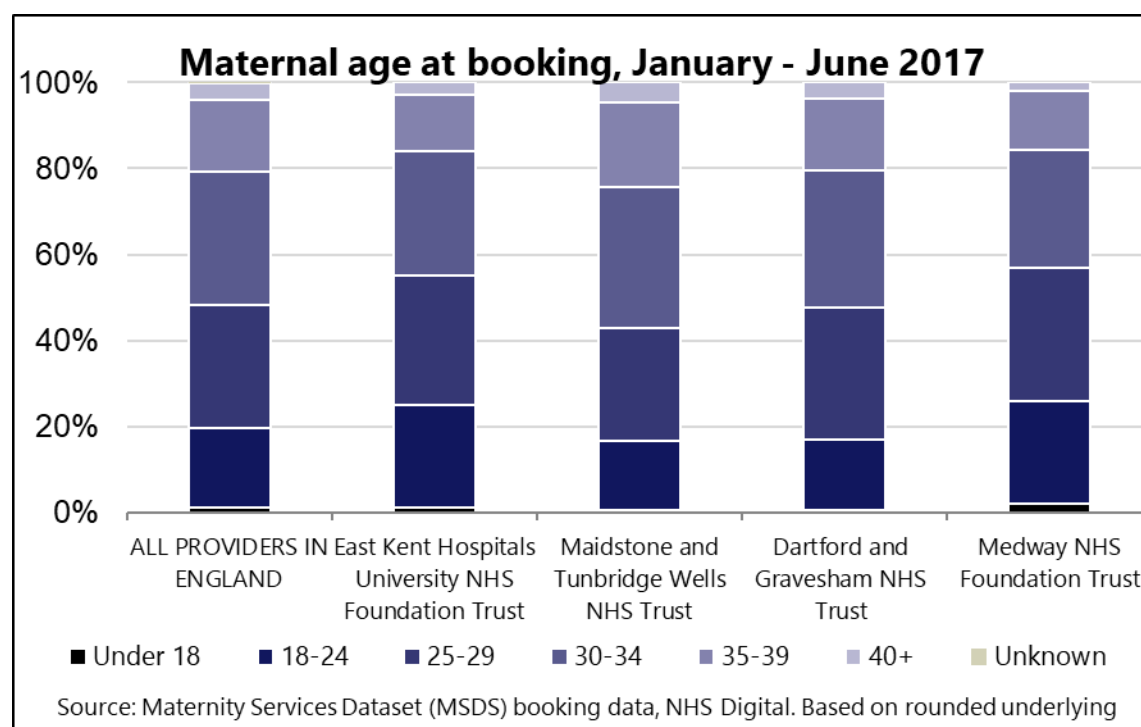


Graph 4: Maternal deprivation Medway residents, January – June 2017

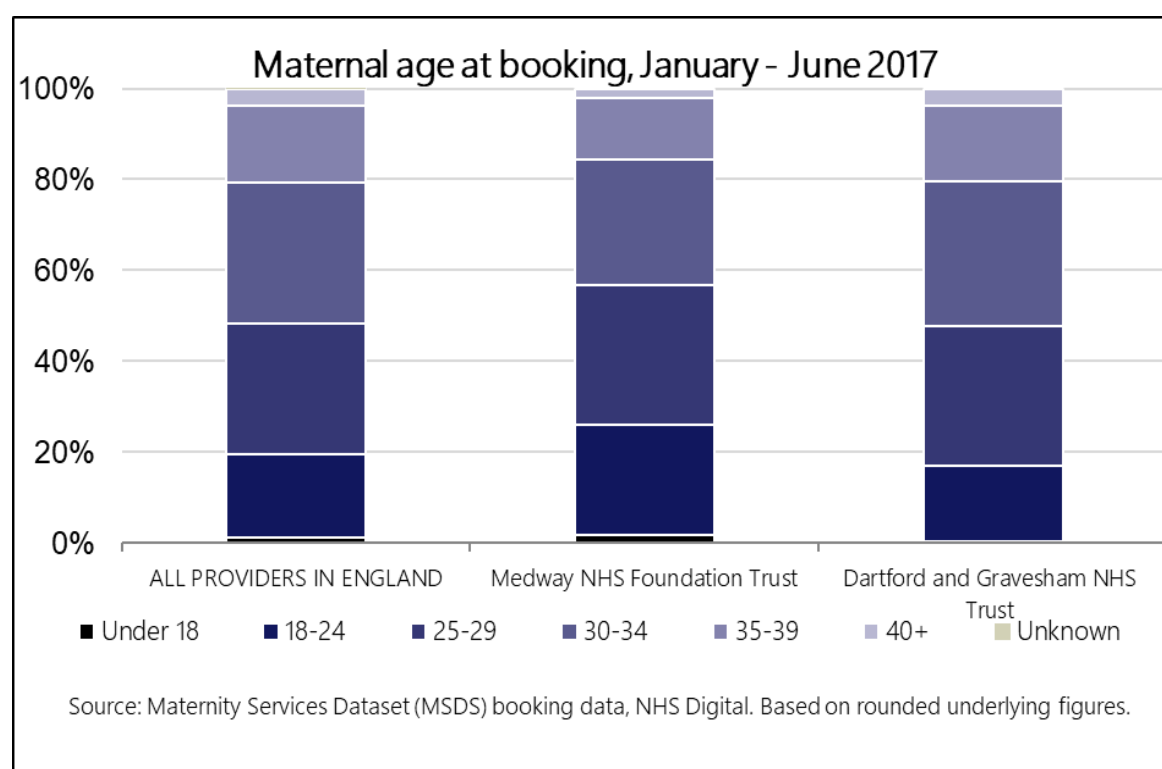


Maternal age is shown in the next two graphs because older age is a known risk factor for higher BMI levels.

Graph 5: Maternal age at booking Kent residents, January – June 2017



Graph 6: Maternal age at booking, Medway residents, January – June 2017



1.3 General fertility rate

The general fertility rate [GFR] provides an indication of population growth. The GFR represents the number of live births per 1,000 females aged 15 – 44 years. In Kent this has remained constant over the last three years with a rate of 63.0 per 1,000 females 15 – 44 years and in Medway 66.0 compared to the England and Wales average rate of 61.0 in 2017.

The total period fertility rate [TFR] is the average number of children a woman would have if she experienced current age specific fertility rates throughout her reproductive life span. The TFR illustrated below for all districts in Kent and Medway suggests that women in Kent and Medway could have more births than the England and Wales average with the exception of Canterbury.

Figure 1: Total period fertility rate, 2017

District	Total period fertility rate [TFR]
England and Wales	1.76
Kent	1.89
Ashford	2.10
Canterbury	1.38
Dartford	2.03
Dover	1.84
Folkestone and Hythe	1.84
Gravesham	2.02
Maidstone	1.96
Medway	1.91
Sevenoaks	1.93
Swale	2.09
Thanet	2.06
Tonbridge and Malling	2.00
Tunbridge Wells	1.84

Source: KCC- Population data

1.4 Births

In 2017 there were 17,467 registered births amongst Kent residents and 3601 amongst Medway residents. Approximately 1 in 6 females in Kent and Medway aged 15 - 44 years gave birth in 2017. The rates of births in 2016 presented below highlights that births are amongst younger women in Kent compared to England. This is important to contextualise when considering the impact of increasing age on weight outcomes [see 2.3]

Figure 2: Rate of live births per 1,000 women in age group, Kent, Medway and England, 2016

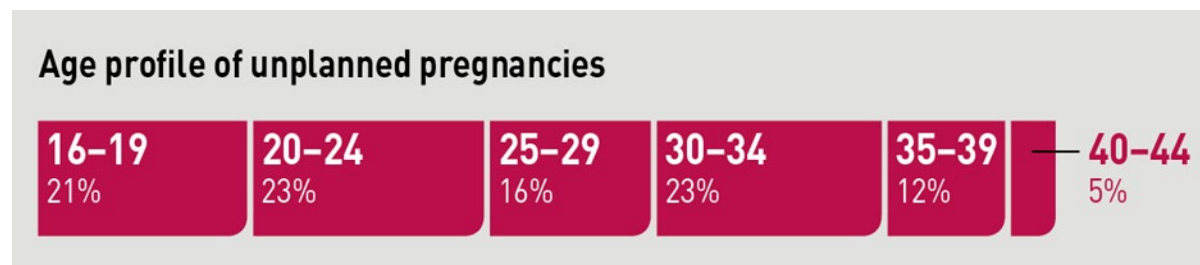
Age	Medway	Kent	England
under 18	9.7	6	5.6
under 20	18.7	14.7	13.5
20-24 years	68.4	63.2	55.6
25-29 years	117.9	111.4	98.5
30-34 years	106.3	113.8	112.4
35-39 years	61.1	63.3	67.5
40-44 years	9.5	11.9	14.9
45 & over	0.8	0.8	1.1

Source: ONS

1.5 Planned and unplanned pregnancies

The most recent NATSAL study in 2014⁸ found that 45% of pregnancies were unplanned or that women were ambivalent about them. Of these, 57% led to termination and 43% continued but with an increased risk of poorer health outcomes. There is a breadth of evidence to illustrate the impact from adverse childhood experiences on unintended pregnancy in teenage years and adulthood which may explain some of these figures.

Figure 3: Age profile of unplanned pregnancies from the NATSAL⁹



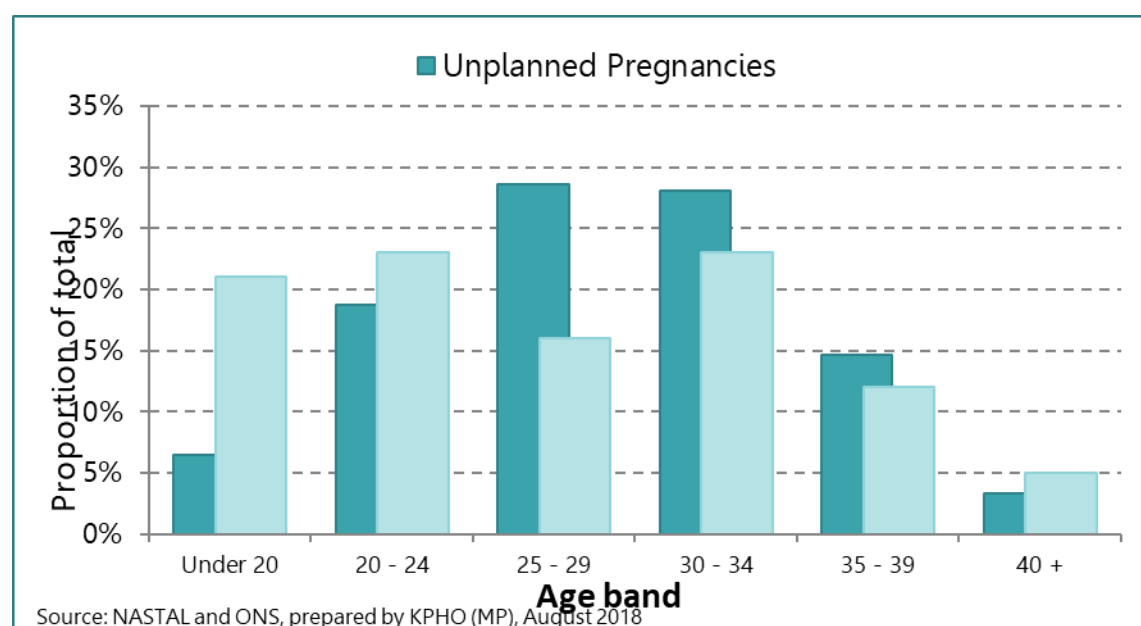
Source: PHE presentation 2017

Using the above study is a helpful guide to retrospectively estimate unplanned pregnancy in a subsequent year and consider how to support those age ranges where this is higher to access contraception.

⁸ NATSAL <http://www.natsal.ac.uk/media/2102/natsal-infographic.pdf>

⁹ NATSAL <http://www.natsal.ac.uk/media/2102/natsal-infographic.pdf>

Graph 7: Age profile of unplanned pregnancies from NATSAL survey vs total conceptions in 2016, England



1.6 Why is maternal weight a public health concern?

Maternal obesity is positively associated with unemployment, age and black ethnic group. Women themselves attribute weight gain during pregnancy and their inability to lose this weight as a factor for long term obesity. These are established predictors.¹⁰

Excessive gestational weight gain is linked with increasing deprivation, adverse infant childhood and maternal outcomes.

The increased propensity to be influenced by the marketing of foods: palatable, high fat, high sugar, affordable, accessible manufactured foods alongside changes to work practices have created deficits in the calories taken in and calories used which in turn has impacted on the health of females of reproductive years.

A child's weight is an indicator of adult weight as highlighted by PHE in 2017¹¹ 'nearly a third of children aged 2 to 15 are overweight or obese and younger generations are becoming obese at earlier ages and staying obese into adulthood.' **1 in 4** children in Kent at age 4-5 years in 2016/17 were measured as overweight or obese and of these 1 in 5 were females. In Medway 1 in 4 children aged 4-5 years in 2016/17 were measured as overweight or obese.

¹⁰ <https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/1471-2393-13-10>

¹¹ PHE health matters 2017 <https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2>

The Foresight¹² analysis suggested that by 2015, 36% of males and 28% of females would be obese and by 2025, these figures are estimated to rise to 47% and 36% respectively. By 2050, 60% of males and 50% of females could be obese and about 25% of all children under 16 could be obese. In 2017 the Health survey for England¹³ found 27% of adult males and 30% of adult female were obese.

1.7 Factors that may lead to maternal obesity

In England data suggests that¹⁴:

- age **over 35 years** is a predictive factor for maternal obesity
- **84.6%** of obese mothers are white Caucasian
- **1 in 3** pregnant women with BMI ≥ 35 kg/m² live in the **most deprived** quintile

Summary:

1 in 5 pregnant women in Kent and Medway were classified as obese in 2017.

Increasing weight is associated with age and therefore should be considered when planning conception.

Maternal obesity is associated with an increased risk on pregnancy outcomes including miscarriage, venous thromboembolism and gestational diabetes.

¹² Foresight Tackling Obesity

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/287937/07-1184x-tackling-obesities-future-choices-report.pdf

¹³ Health Survey for England [2017] Summary report

<https://files.digital.nhs.uk/5B/B1297D/HSE%20report%20summary.pdf>

¹⁴ Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries. Management of women with obesity in pregnancy. Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries, 2010.

<https://www.rcog.org.uk/globalassets/documents/guidelines/cmacercojointguidelinemanagementwomenobesitypregnancy.pdf>

2. Maternal weight – a risk factor for mothers and infants

2.1 National context

In 2007 the Foresight report¹⁵ suggested that 40% of the adult population in England would be obese by 2025. At that time [from 2004 data] the prevalence of obesity amongst women was 23.8%. The weight of the population in England is increasing. In 2016/17 in Kent 63% of the adult population aged 18 and above are classified as overweight or obese¹⁶ compared to the England average of 61.3%

Obesity occurs when energy intake from food and drink consumption is greater than energy expenditure through the body's metabolism and physical activity over a prolonged period. There are many complex behavioural and societal factors that combine to contribute to the causes of obesity. Over 100 variables directly or indirectly influence obesity, with energy balance at its centre (1).

The government have made commitment through policy and legislation to tackle obesity in the population, in their action plan specifically relating to childhood obesity.

2.2 Chief Medical Officer report

The CMO in her annual report in 2014 stated that 'In women obesity can affect the outcomes of any pregnancies they have and impacts on the health of any future children they may have. In pregnant women, the developmental environment can affect the foetus and its germline cells, e.g. their eggs (primary oocytes) and so a woman's health whilst she is pregnant also impacts on the health of her children and grandchildren'¹⁷

Elsewhere in her report the changes to the origins of health and disease are seen from the environment in which the foetus and new-born are exposed. It is suggested whilst not obvious at birth these environments influence the long-term risk of obesity and disease. 'This novel trans generational mode of disease 'inheritance' from parents to children is likely to account for a greater proportion of risk in the population than fixed genetic effects.'¹⁸

Whilst there is wide acknowledgement that the health of the mother is at risk during pregnancy and birth if the BMI is high, indeed medical interventions are focused on those with a BMI over 35 and there are guidelines on the management of women with obesity in

¹⁵ Foresight Tackling Obesity- Future Choices 2007

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/287937/07-1184x-tackling-obesities-future-choices-report.pdf

¹⁶ <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/6/gid/1000042/pat/6/par/E12000008/ati/102/are/E10000016/iid/93088/age/168/sex/4>

¹⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595439/CMO_annual_report_2014.pdf

¹⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595439/CMO_annual_report_2014.pdf

pregnancy,¹⁹ there is less emphasis given to the subsequent and potential health of the infant.

The epidemic of obesity has led to rising levels of obesity amongst females of reproductive years which is impacting on the reproductive and maternal health of individuals. In 2013 it was reported²⁰ that in England 50.8% of women aged 25–34 were overweight or obese. This has implication on future health, pregnancy and health of their children. In Kent and Medway in 2017,²¹ 50% of pregnant women were recorded as overweight, obese or morbidly obese at booking appointment. Of these 22% aged 25-34 were obese or morbidly obese.

Key to understanding these increases will be how women are assessed or weighed at their antenatal booking and what triggers would identify the need for additional support or referral to other services.

2.3 Maternal weight and pregnancy

The impact of maternal weight on the outcomes and risks for pregnancy, delivery and infant are indisputable. The increase in the proportion of miscarriage follows across the categorization and identification of excess weight, that is overweight to morbidly obese. This effects of maternal obesity for the pregnant woman, foetus and child are illustrated below.

¹⁹ Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries. Management of women with obesity in pregnancy. Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries , 2010.

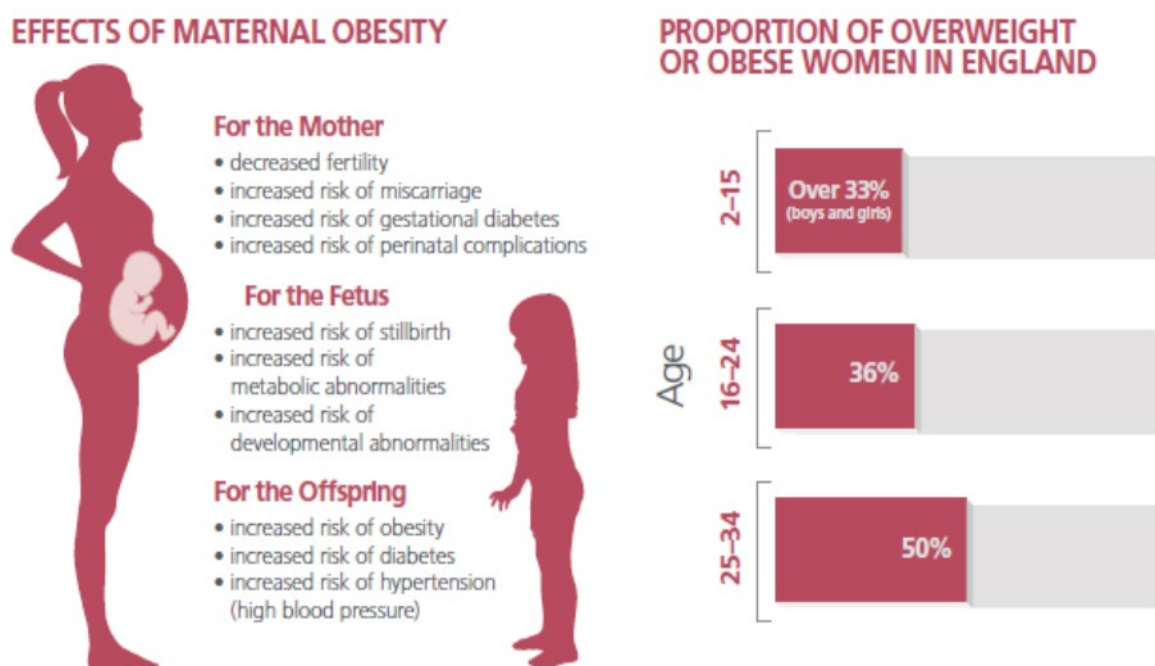
<https://www.rcog.org.uk/globalassets/documents/guidelines/cmacercogjointguidelinemanagementwomenobesitypregnancy.pdf>

²⁰ DH [2015] The Health of the 51%: Women CMO report 2014

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595439/CMO_annual_report_2014.pdf

²¹ Kent Public Health Observatory 'Maternal weight: Analysis of maternity booking data from NHS digital' 2017

Illustration 2: Effects of maternal obesity



Source: Annual report of the CMO 2014

A longitudinal study²² in Northern Ireland made clear the breadth and range of increasing risks and adverse outcomes with increased maternal weight. This study concluded that classifying obesity and overweight would help in supporting women. This conclusion is exemplified in the outcomes of pregnancy from excess maternal weight which are illustrated in the next figure.

²² The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric population, 2004-2011 Scott-Pillai, R; Spence, D; Cardwell, Cr; Hunter, A; Holmes, Va BJOG: An International Journal of Obstetrics & Gynaecology; Jul 2013; vol. 120 (no. 8); p. 932-939

Figure 4: Pathways of care and outcomes of pregnancy in relation to excess maternal weight as determined at ante natal booking

Category and BMI	Pregnancy	Delivery	Post-natal	Infant
Overweight BMI 25-29.9 and Obese BMI 30-34.9	Hypertensive disorders Gestational diabetes mellitus Induction [spontaneous labour less likely]	Caesarean section	Postpartum haemorrhage Macrosomia	
Obese BMI 35-39.9	the above risks increase			
Morbidly obese BMI 40+	Monitoring ++	Pre term delivery Still birth	Increased post-natal hospital care	Neonatal care

In addition, pregnant women with eating disorders are also more at risk of having a miscarriage and are at greater risk of severe depression or requiring a caesarean section.

The final components of this section illustrate the impact of maternal weight on health and social outcomes.

2.3.1 Maternal weight and gestational diabetes

Gestational diabetes is considered to be the result of metabolic changes with the body unable to produce the levels of insulin needed along with underlying predisposition to developing the condition. It is a type of diabetes that develops during the second half of pregnancy and for this reason a glucose tolerance test is undertaken during the third trimester to identify those women who may have the condition. NICE recommend testing according to a number of maternal clinical risk factors which includes obesity (see figure 5). However, studies²³ suggest that testing according to these risk factors alone, will miss many women as there is only a moderate association with these identified risk factors. Studies have suggested a longer list of risk factors be considered as indicative of testing.

²³ Moncrieff G [2018] Gestational diabetes, British Journal of Midwifery Vol 26 (8) 506-513

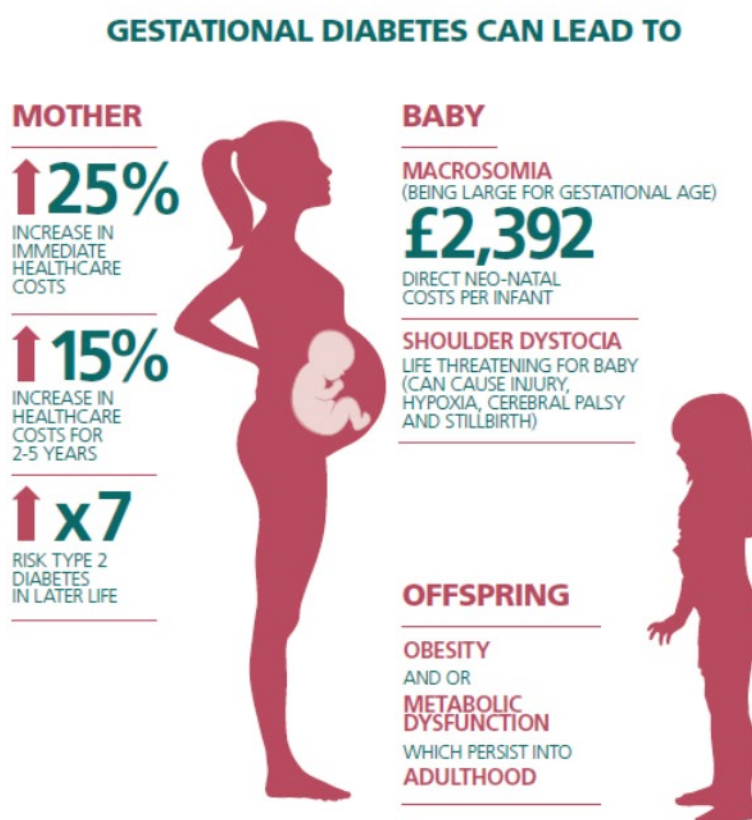
Figure 5: Risk factors for gestational diabetes

Risk factors used by NICE	Gestational diabetes risk factors
BMI over 30kg/m ²	Obesity/overweight
Previous gestational diabetes	Previous macrosomic baby
Family history of diabetes	Previous gestational diabetes
Minority family ethnic origin ²⁴	Family history of diabetes
Previous macrosomic baby [>4.5kg]	Older age
	Excessive gestational weight gain
	Polycystic ovary syndrome [POS]
	Minority ethnic origin
	Hypertension
	Glucosuria

²⁴ <https://www.nhs.uk/conditions/gestational-diabetes/>

Gestational diabetes can have a number of impacts on both the mother and offspring as illustrated below.

Illustration 3: Effects of gestational diabetes



Source: CMO Annual report 2014²⁵

Gestational diabetes risk increases with maternal age -over 25-year olds which further increases after age 35. Terence et al²⁶ concluded that age 25 and over should be used as the cut off minimum age for gestational diabetes screening. A positive correlation was found increasing prevalence risk by <21 – baseline, 21-24 – no sig diff, 25-29 – 2.6%, 30-34 – 4.4%, 35-39 – 10.9% and 40+ - 15.9%, after adjusting for other factors e.g. weight.

A study in one London hospital²⁷ showed increasing use of oral glucose tolerance test sensitivity [OGTTs], which then found a higher prevalence in Afro-Caribbean women than Europeans. This study may imply that using this sensitivity of testing is more accurate and that prevalence underestimated. A retrospective study across Leeds, London, Manchester and Cork by Murphy et al²⁸ looked at compliance of NICE risk factors amongst nulliparous

²⁵ DH [2015] The Health of the 51%: Women CMO report 2014
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595439/CMO_annual_report_2014.pdf

²⁶ Lao T, Lai-Fong M, Chan B, Leung W [2006] Maternal age and prevalence of gestational diabetes mellitus
<http://care.diabetesjournals.org/content/29/4/948>

²⁷ Guys and St Thomas hospital Diabetic Medicine

²⁸ Murphy N, McCarthy F, Kashan A, Myers J, Simpson N, Kearney P, Greene R, Poston L, Kenny L [2016] 'Compliance with National Institute of Health and Care Excellence risk-based screening for Gestational Diabetes Mellitus in nulliparous women' <https://www.sciencedirect.com/science/article/pii/S0301211516300239?via%3Dihub>

women. The risk factors were obesity, family history of diabetes and increase ethnic risk. 60.8% had an identified risk factor for gestational diabetes mellitus [GDM], a further 38.9% with a single risk factor were not screened and 14.6% with no risk factors were screened. **Of note ethnicity was the risk factor most likely to be missed.**

Agreement about the base line for identifying the 'at risk' of gestational diabetes population amongst some ethnic groups in relation to BMI level continues to be discussed. Some research articles suggest using different screening strategies and BMI thresholds for different ethnic groups. The prevalence of type 2 diabetes is higher amongst some ethnic groups. Pregnant women may have undetected type 2 diabetes and pregnant women who develop gestational diabetes are at higher risk of developing type 2 diabetes. A NICE evidence review in 2013²⁹ concluded that people from Black, Asian and other minority ethnic groups are at an equivalent risk of type 2 diabetes, at a lower BMI than the white European population. Moreover, the World Health Organisation [WHO] have considered different definitions for Asian woman who are at increased risk of cardiovascular disease or type 2 diabetes to define excess weight for them from a BMI 22kg/m²³⁰ In her report the CMO³¹ suggested that GTT for all pregnant women in the first trimester might be of value.

Two studies^{32 33} show seasonality and neighbourhood deprivation to be inconclusive factors in prevalence of GDM. Another study found seasonal differences to be significantly higher in summer.³⁴

That said the incidence of gestational diabetes is not well recorded to provide a clear estimate of the local population affected at any one time. Over ten years ago gestational diabetes was estimated to occur in approximately 5% of pregnancies³⁵ More recent studies³⁶ estimate that diabetes affects 5-7% of pregnancies and of these 8 in 10 are gestational diabetes.³⁷ Meta-analysis by Eades et al³⁸ found European prevalence to be 5.4% in the pregnant population.

²⁹ NICE [2013] PH46: Preventing ill health and premature death in Black, Asian and minority ethnic groups
<https://www.nice.org.uk/guidance/ph46/chapter/1-Recommendations>

³⁰ Hedderson m, Ehrlich S, Sridhar S et al 'Racial/ethnic disparities in the prevalence of gestational diabetes mellitus by BMI' cited in Wan, Schmidt, Wing, McIntyre and Cataano [2016] Clinical management of pregnancy in the obese mother, before conception, during pregnancy and post-partum Vol 4 [1037-2049] *The Lancet*

³¹ DH [2015] The Health of the 51%: Women CMO report 2014
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595439/CMO_annual_report_2014.pdf

³² *Diabetic medicine: a journal of the British Diabetic Association*

³³ Author(s): Janghorbani, Mohsen; Stenhouse, Elizabeth; Jones, Raymond B; Millward, Ann Source: *The Journal of reproductive medicine*; Feb 2006; vol. 51 (no. 2); p. 128-134

³⁴ <http://care.diabetesjournals.org/content/39/7/1218>

³⁵ <https://www.diabetes.org.uk/resources-s3/2017-11/diabetes-key-stats-guidelines-april2014.pdf>

³⁶ Moncrieff G [2018] Gestational diabetes, *British Journal of Midwifery* Vol 26 (8) 506-513

³⁷ NICE[2008] Diabetes in pregnancy: management of diabetes and its complications..

<https://www.nice.org.uk/Guidance/CG63>

³⁸ <https://www.ncbi.nlm.nih.gov/pubmed/28531829>

2.3.2 Maternal weight and peri natal mental health

Body image and body weight often relate to individuals emotional, social and physical wellbeing. This is no less so in pregnancy. Local anecdotal information suggests that the mental health of pregnant women who have a higher maternal weight is affected. Systematic reviews³⁹ of obese pregnant women have found that these women compared to women of healthy weight are at higher risk of depression symptoms during pregnancy and post-natally.

Secondary analysis of studies⁴⁰ explored relationships between mental disorders, obesity and pregnancy complications. This 'showed that, compared with normal-weight women, overweight and obese women were much more likely to have depression both during and after pregnancy. They were also more likely to suffer from anxiety during pregnancy. The higher their body mass index at the start of pregnancy, the greater the risk of depression. There was also some evidence that obese women were more likely to experience anxiety following birth, binge eating disorders and psychotic disorders.'

2.3.3 Maternal weight and domestic violence

It is suggested⁴¹ that domestic abuse occurs amongst 1 in 3 pregnancies. Given the prevalence of obese and overweight pregnant woman it is plausible therefore that some women experiencing domestic abuse will be in these figures. However, it is known that babies born to women who have been victims of domestic abuse during pregnancy are at higher risk of having a low birth weight. Studies⁴² of adverse childhood experience have found links with obesity, where food is a psychoactive substance and being obese makes them feel safe.

2.3.4 Weight gain during pregnancy

There are no guidelines to support women or professionals on the appropriate levels of weight gain during pregnancy. NICE guidance⁴³ provides a broad recommendation to provide advice about healthy eating and lifestyle behaviours.

An update of a Cochrane review⁴⁴ to evaluate the effectiveness of exercise or diet, or both, for preventing excessive gestational weight gain and related pregnancy complications found high quality evidence to indicate that exercise or diet or both interventions during

³⁹ Cited in Poston et al [2016] 'Preconceptional and maternity obesity: epidemiology and health consequences' *The Lancet* [4] 1025-1036

⁴⁰ Howard L et al 'Obesity and mental health in pregnancy' <https://www.tommys.org/our-organisation/research-by-pregnancy-complication/obesity/obesity-and-mental-health>

⁴¹ NHS video

⁴² Larkin W Presentation on Adverse Childhood Experiences and Trauma Informed Care 29th January 2019

⁴³ NICE [2010] Weight management before, during and after pregnancy <https://www.nice.org.uk/guidance/ph27/chapter/1-Recommendations#recommendation-1-preparing-for-pregnancy-women-with-a-bmi-of-30-or-more>

⁴⁴ Cochrane database of systematic reviews 'Diet or exercise, or both, for preventing excessive weight gain in pregnancy (review)' [3:2016] Issue 6

pregnancy 'can reduce the risk of excessive gestational weight gain' This reduced the risk on average overall by 20%.

One cohort study⁴⁵ that looked at early maternal BMI, gestational weight gain and risk of Autistic Spectrum Disorders [ASD] concluded that evidence was stronger for a direct link between gestational weight gain and ASD risk. This Swedish study found that a higher maternal BMI at the start of pregnancy and the paternal BMI at the age of 18, to be 'independently associated with an increased risk of ASD in offspring.' Both excessive or insufficient maternal gestational weight gain were associated with an increased risk of ASD.

Women are weighed at booking appointment but are not routinely weighed during pregnancy. Anecdotal evidence locally suggests that pregnant East European women are very concerned about weight gain and request opportunity to weigh themselves at all midwifery appointments.

A Norwegian cohort study⁴⁶ found the postpartum retention of weight to be significantly higher amongst women whose ethnic origin was Africa, Middle East or South Asia compared to western European women.

2.4 Maternal weight and delivery

The delivery of babies to women with higher BMIs increases the need for medicalised, monitored deliveries such are the risks to the women and baby. Women with BMI 30 and above are at greater risk of having hypertension seen as pre-eclampsia, deep vein thrombosis and developing gestational diabetes. Increased monitoring of women with diabetes during delivery is required.

Women with a higher BMI are at increased risk of having shoulder dystocia during delivery. Studies suggest this is approximately 1 in 150 vaginal births.⁴⁷ There is an increased risk that the progression of labour will be slow and need for emergency caesarean section.⁴⁸

Further assessment with measurement of weight at 36 weeks gestation helps determine the care plan and the need for bariatric resources with the support of manual handling staff including their physical presence in theatre if surgical intervention required.

Delivery at home is a woman's choice and is not determined by maternal BMI at booking.

The most recent study into maternal deaths⁴⁹ has found that 20% [1 in 5] who died during the period observed had a BMI classified as overweight and more than a third [37%] were

⁴⁵ Gardner R et al [2015] Maternal body mass index during early pregnancy, gestational weight gain, and risk of autism spectrum disorders: Results from a Swedish total population and discordant sibling study *International Journal of Epidemiology* <https://academic.oup.com/ije/article/44/3/870/632466>

⁴⁶ Waage, CW; Falk, RS; Sommer, C; Mørkrid, K; Richardsen, KR; Bærug, A; Shakeel, N; Birkeland, KI; Jenum, AK; Waage, C W; Falk, R S; Richardsen, K R; Bærug, A; Birkeland, K I; Jenum, A K [2016] Ethnic differences in postpartum weight retention: a Norwegian cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology* 123 (5) 699-708 <http://onlinelibrary.wiley.com/doi/10.1111/1471-0528.13321/epdf>

⁴⁷ <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg42/>

⁴⁸ CMAE/RCOG [2010] Joint guideline: Management of Women with Obesity in Pregnancy

obese. Venous thromboembolism [VTE] is the leading cause of maternal deaths. As all women with a higher BMI are at risk of a VTE it is recommended in this study that these women are 'given information about the symptoms of VTE.'⁵⁰ The RCOG guidance⁵¹ highlights that pregnant women with a BMI 30 and over at pre-pregnancy or at booking have an existing risk factor for developing a VTE during pregnancy.

2.5 Maternal weight and infant health

This section explores the impact of maternal weight on the health of offspring as there is increasing evidence that this is major determinant of childhood and adult health.

2.5.1 Maternal weight and breastfeeding

There is recognition that the breastfeeding rates amongst obese women are lower than the breastfeeding rates of those with a healthy BMI.

Recent evidence⁵² has found that excessive gestational weight gain or obesity pre-pregnancy is associated with a greater risk of delay in the production of milk, lactogenesis.

A study⁵³ in France has found that pre-pregnancy obesity was independently associated with breastfeeding for a shorter duration of time. This study sought to estimate the association of breastfeeding duration and pre-pregnancy BMI after controlling for social demographic factors. The study found amongst women with their first baby, that being overweight was significantly associated with exclusively breastfeeding for a shorter duration. This was also seen amongst women with subsequent babies, where obesity was associated with exclusive breastfeeding for a shorter time.

Analysis of a child and mother cohort study in Norway⁵⁴ showed that the rate of growth in babies born to mothers with an eating disorder over the first 12 months was much lower. However, analysis of this same cohort of mothers identified that those with an eating disorder were most likely to breast feed.

⁴⁹ Knight M et al [eds] MBRRACE-UK Maternal deaths 'Saving Lives: Improving Mothers Care' November 2018 <https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Maternal%20Report%202018%20-%20Web%20Version.pdf>

⁵⁰ Knight M et al [eds] MBRRACE-UK Maternal deaths 'Saving Lives: Improving Mothers Care' November 2018 <https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Maternal%20Report%202018%20-%20Web%20Version.pdf>

⁵¹ RCOG Guidance on the Care of women with obesity in pregnancy 2018 <https://obgyn.onlinelibrary.wiley.com/doi/epdf/10.1111/1471-0528.15386>

⁵² Preusting I et al [2017] 'Obesity as a predictor of Delayed Lactogenesis II' *Journal of Human Lactation* doi.org/10.1177/0890334417727716

⁵³ Boudet-Berquier J et al [2017] 'Association between maternal pre pregnancy obesity and breastfeeding duration' *Child and Maternal Nutrition* doi.org/10.1111/mcn.12507

⁵⁴ Waage, CW; Falk, RS; Sommer, C; Mørkrid, K; Richardsen, KR; Bærug, A; Shakeel, N; Birkeland, KI; Jenum, AK; Waage, C W; Falk, R S; Richardsen, K R; Bærug, A; Birkeland, K I; Jenum, A K [2016] Ethnic differences in postpartum weight retention: a Norwegian cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology* 123 (5) 699-708 <http://onlinelibrary.wiley.com/doi/10.1111/1471-0528.13321/epdf>

2.5.2 Maternal weight gain and health of children

The published evidence⁵⁵ on the impact of maternal weight and maternal weight gained during pregnancy on the health of offspring as children and increasingly amongst adults is compelling.

A prospective cohort study in California found a positive association between women who had exceeded the gestational weight gain recommendations and childhood obesity. These women gave birth to larger children and were 46% more likely to have an overweight/obese at 2-5 years old compared to women who met the gestational weight gain⁵⁶.

A study in Finland shows that women who gained more than 7kg in the first 20 weeks of their pregnancy are 36% more likely to have overweight or obese adolescent offspring⁵⁷. This suggests early gestational weight gain plays a crucial role in foetal growth and the offspring's weight later in life.

Regression analysis of an observational cohort study of mother and child pairs found that an excess pregnancy weight gain was associated with an increased risk of an overweight child at age 3. The impact was greatest amongst those with a high BMI.⁵⁸

Studies⁵⁹ suggest that early pregnancy gestational weight gain could be linked to an unfavourable cardiovascular risk profile in childhood.

Meta-analysis of studies⁶⁰ of mother – child pairs indicated that excess weight in pregnancy was associated with greater risk of childhood wheeze or asthma.

2.6 Maternal weight and contraception use

A case control study in Ireland⁶¹ found that obese women were 1.3 times more likely to have an unplanned pregnancy with ratios increasing in relation to higher BMI, where obese women were 1.7 times more likely to have an unplanned pregnancy compared to those of a 'normal' BMI. Amongst women with higher BMIs unplanned pregnancy was associated with **higher contraception failure and less contraception use.**

⁵⁵ Godfrey et al [2016] 'Influence of maternal obesity on the long-term health of offspring' *The Lancet* [5] 53-64

⁵⁶Sridhar, S. et al. (2014) "Maternal gestational weight gain and offspring risk for childhood overweight or obesity", *American Journal of Obstetrics and Gynecology*, 211(3), pp. 259.e1-259.e8. doi: 10.1016/j.ajog.2014.02.030..

⁵⁷Laitinen J, Jaaskela A, Hartikainen A, Sovio U, Vääräsmäki M, Pouta A, Kaakinen M, Järvelin M.(2012) Maternal weight gain during the first half of pregnancy and offspring obesity at 16 years: a prospective cohort study. *BJOG* 119:716–723.

⁵⁸ Olson C, Strawderman M, Dennison B. [2009] 'Maternal weight gain during pregnancy and child weight at age 3 years' *Maternal and child health Journal*

⁵⁹ Godfrey et al [2016] 'Influence of maternal obesity on the long-term health of offspring' *The Lancet* [5] 53-64

⁶⁰ Cited in Godfrey et al [2016] 'Influence of maternal obesity on the long-term health of offspring' *The Lancet* [5] 53-64

⁶¹ McKeating A et al [2015] The relationship between unplanned pregnancy and maternal body mass index 2009-2012 <http://dx.doi.org/10.3109/13625187.2015.1023893>

Secondary analysis of an American study 2006 - 2013⁶² has suggested that morbidly obese women use contraception less and that these women are at the highest risk of unplanned pregnancy.

Local anecdotal information suggests that an observed number of women are returning with a further pregnancy within 12 months of delivery. This would indicate that contraception is not being used, knowledge or myths about breastfeeding and conception are incorrect. A retrospective internal trust audit commenced in October 2018.

2.7 Service costs

PHE reported⁶³ that high maternal BMI was associated with increased health service usage and costs. Further UK economic studies have found that maternity costs are significantly higher for overweight or obese women compared to women of a healthy BMI. One, a large retrospective cohort study in Scotland⁶⁴ concluded that when compared to pregnant women of a healthy weight, women who were underweight had an 8% increase in admission. The proportion of admissions increased by weight group with overweight, obese, or severely obese associated with an 8%, 16%, 45%, and 88% respectively. These were higher in the post-natal period and found to be more prevalent amongst those identified as severely obese [BMI \geq 40]. In addition, there was an increase in the length of stay in hospital amongst pregnant women who were overweight, obese, or severely obese compared to pregnant women of healthy weight at 4%, 9%, and 12% respectively.

- The detection of gestational diabetes is lower than expected
- Risk factors for gestational diabetes are broader than those outlined in NICE guidelines and most frequently missed is ethnicity
- Gestational diabetes increases the risk of type 2 diabetes x 7 in mothers and obesity in the offspring
- All women with a higher BMI are at risk of venous thromboembolism, the leading cause of maternal death
- Excess maternal weight and gestational weight gain impact negatively on the health of the infant
- Classifying maternal weight by overweight and obesity

⁶² Nguyen BT et al [2018] Pregnancy intention and Contraception use among women by class of obesity: results from the 2006-2010 and 2011-2103 National survey of Family Growth <http://dx.doi.org/1.1016/j.whi.2017.09.010>

⁶³ PHE Implications for healthcare services. Public Health England.
http://www.noo.org.uk/NOO_about_obesity/maternal_obesity_2015/implications

⁶⁴ Denison et al [2013] Association between maternal body mass index during pregnancy, short-term morbidity, and increased health service costs: a population-based study *An International Journal of Obstetrics and Gynecology*
<https://obgyn.onlinelibrary.wiley.com/doi/full/10.1111/1471-0528.12443>

| 3. What is the problem in Kent and Medway - Epidemiology

3.1 Introduction

The presentation of the maternal weight in the population of Kent and Medway is provided through an overview of the epidemiological picture, the views of health staff and local insights research. Kent and Medway have a diverse population in terms of socio-economic challenges, rural and urban communities, seaside towns, significant transient populations, poor health outcomes, mental illness, and the availability or unavailability of facilities [e.g fast food outlets, green spaces] which contribute to the obesogenic environment. All present differing challenges in the aim to promote and achieve a healthy weight. The data shown is the most up to date available at the time of analysing.

3.2 Sources of data

All maternity services populate data to the Maternity Services Data Set held by NHS digital. This captures the body mass index [BMI] of the pregnant woman recorded at the booking appointment by individual midwives. This usually occurs before 10 weeks of pregnancy. This section outlines the results of some analysis of maternal weight in Kent & Medway using the Maternity Services Data Set (MSDS). This analysis covers data from 3 years (2015, 2016 and 2017) collected at the time of the booking appointment. Currently all published data reported from the MSDS is badged as Experimental Statistics. This is to inform users of the data that the MSDS and its reported statistics are still in a developmental phase and may have issues pertaining to data quality that should be considered when queried.

The analysis focusses on obesity rates and seeks to explore trends, geographical variation and variations by the characteristics of the mother. Women recorded as having a BMI of 30 or above at the time of booking are classified as obese, and those with a BMI of 40 or above as morbidly obese, with the obesity rates presented in this report calculated taking the number of women with a recorded BMI as the denominator. Women recorded as having a BMI of between 25 and 30 are classified as overweight, and those with a BMI of below 18.5 as underweight. Those women with no BMI recorded which represents approximately 3% of the sample population are excluded from the calculations.

The National Child Measuring Programme [NCMP] is undertaken across states primary schools and measures children's height and weight to calculate BMI in reception and year 6. This is populated by the service provider, analysed and presented by PHE onto PHE fingertips which is in the public domain. Data on adult excess weight is estimated from an annual survey, analysed and presented by PHE on fingertips. Data presented on gestational diabetes from primary care is taken from the Kent integrated data set [KID].

The following sections look at maternal weight, identifying overweight, different levels of obesity as well as under and healthy weights. These are presented by district, by Clinical commissioning group [CCG] and by maternity service provider.

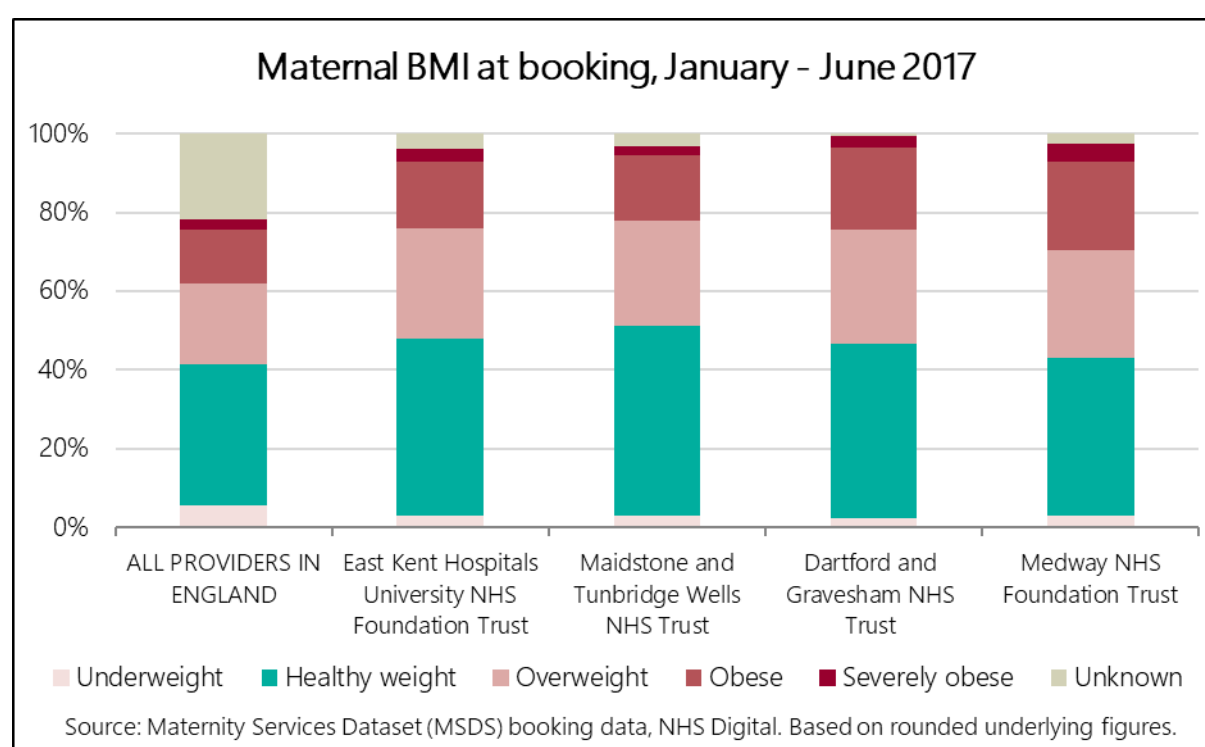
3.3 Findings

This section explores the same data by district, CCG, maternity trust provider, age of pregnant women and ethnicity of pregnant woman.

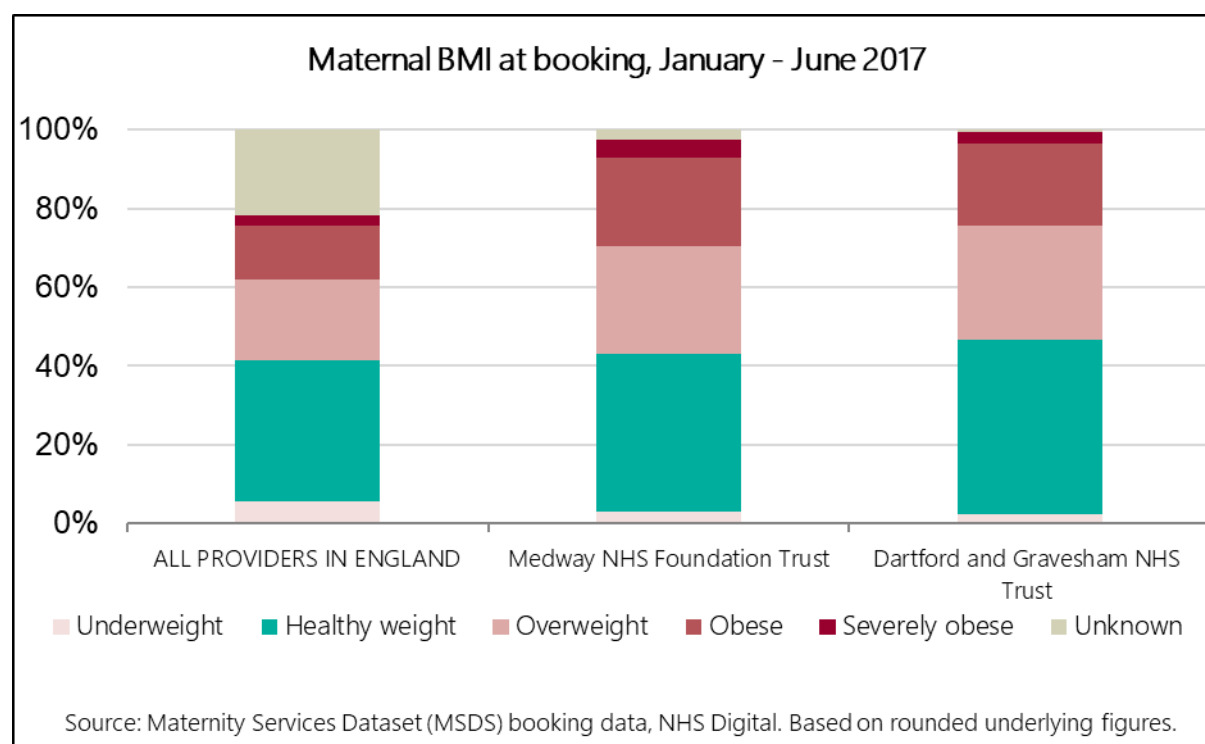
3.3.1 Maternal Weight by Maternity Trust

The following two graphs below provides an analysis of maternal obesity at the time of booking by NHS maternity trust provider

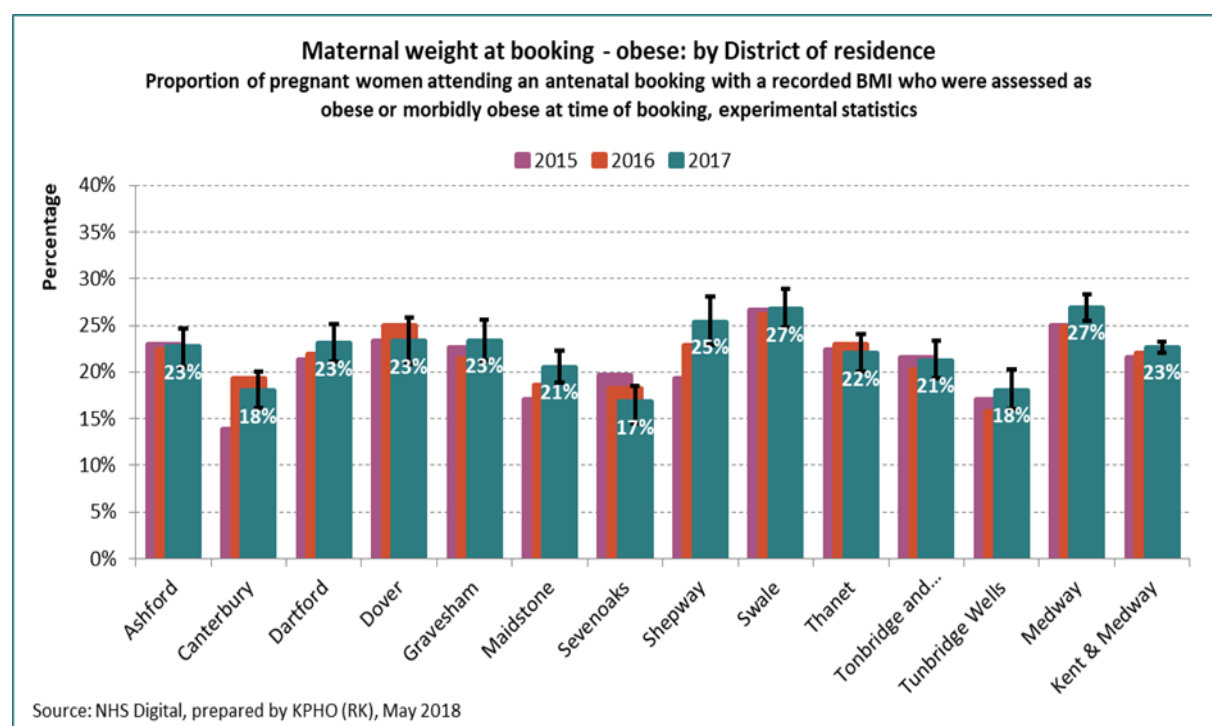
Graph 8: Maternal BMI at booking, Kent residents



Graph 9: Maternal BMI at booking, Medway residents



Graph 10: Proportion of pregnant women attending an antenatal booking with a recorded BMI who were assessed as obese or morbidly obese at booking by districts in Kent and Medway 2015-2017



There is some evidence to suggest that maternal obesity is increasing in Kent & Medway. Amongst those with a recorded BMI, 21.6% were obese in 2015. This increased to 22.7% in 2017.

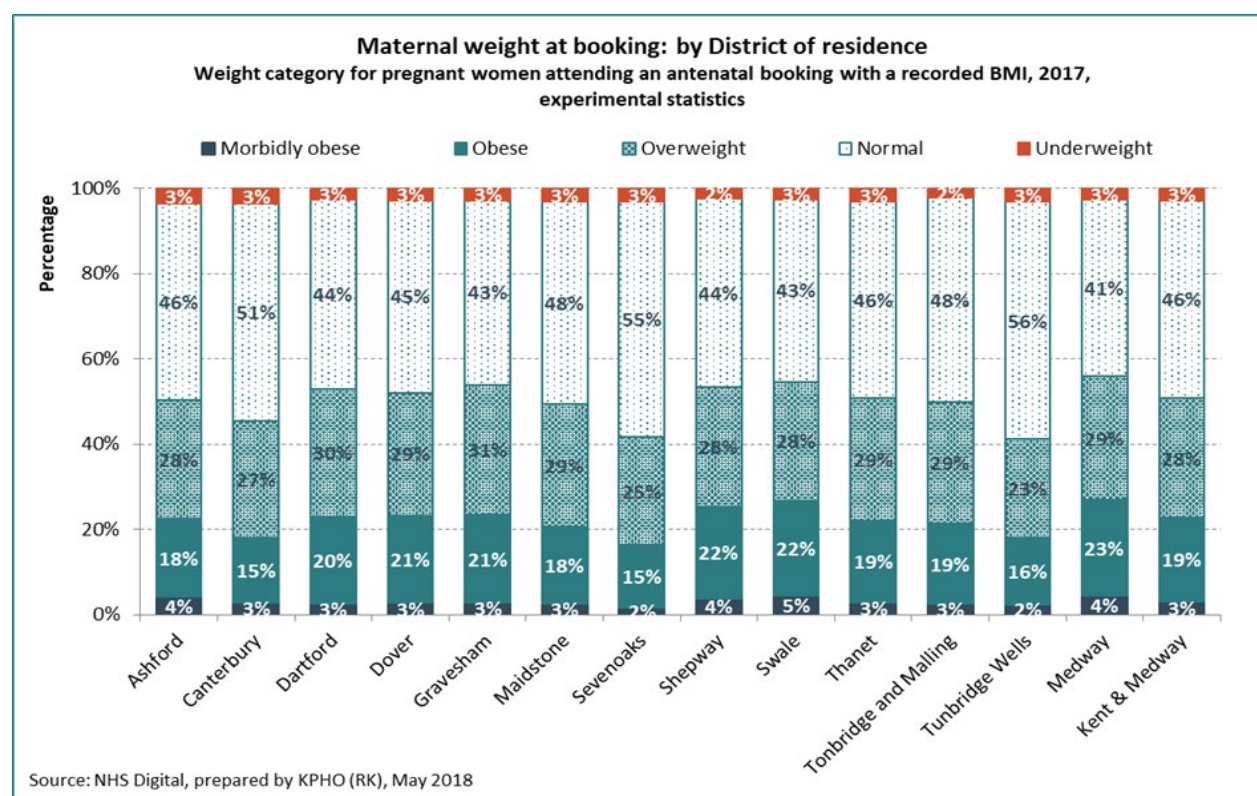
Across the Districts, maternal obesity rates at the time of booking are higher than the Kent and Medway average in:

- Shepway (25% in 2017)
- Swale (27% in 2017)
- Medway (27% in 2017).

Maternal obesity rates at the time of booking are lower than the Kent and Medway average in:

- Canterbury (18% in 2017)
- Sevenoaks (17% in 2017)
- Tunbridge Wells (18% in 2017).

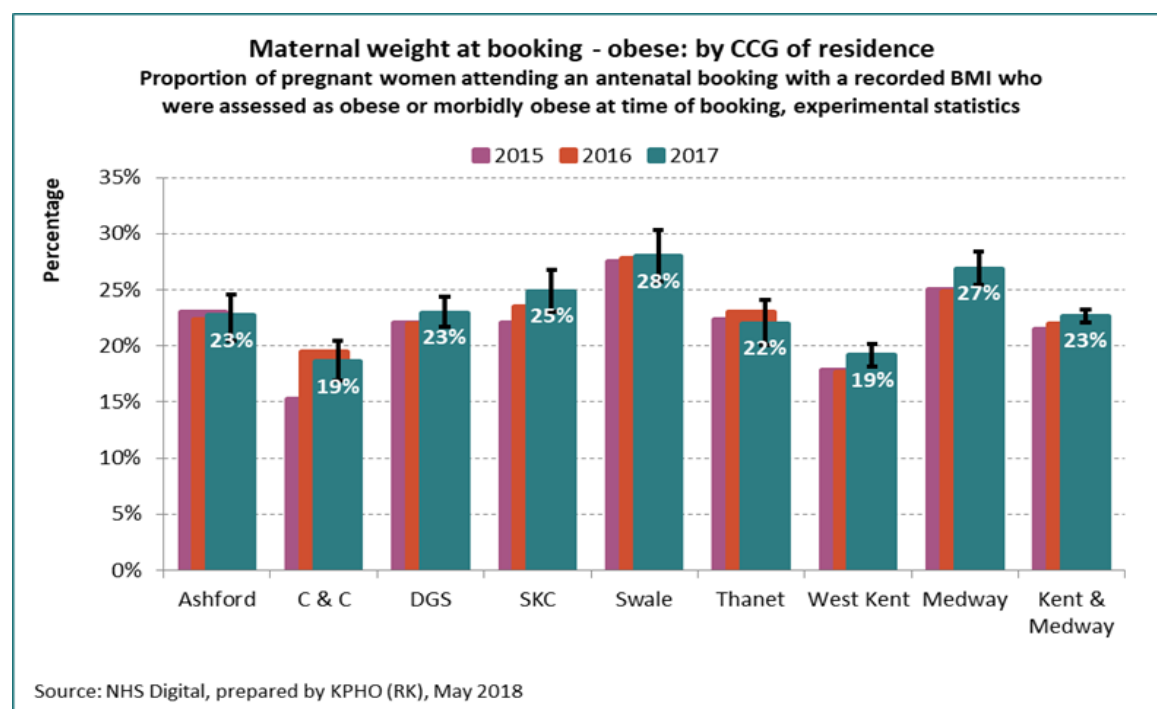
Graph 11: Weight category for pregnant women attending an antenatal booking with a recorded BMI, 2017 by district



3.3.2 Maternal Weight by CCG

The graph below provides an analysis of maternal obesity at the time of booking by CCG of residence.

Graph 12: Proportion of pregnant women attending an antenatal booking with a recorded BMI who were assessed as obese or morbidly obese at time of booking by CCG of residence 2015-2017



Across the CCGs, maternal obesity rates at the time of booking are higher than the Kent and Medway average in:

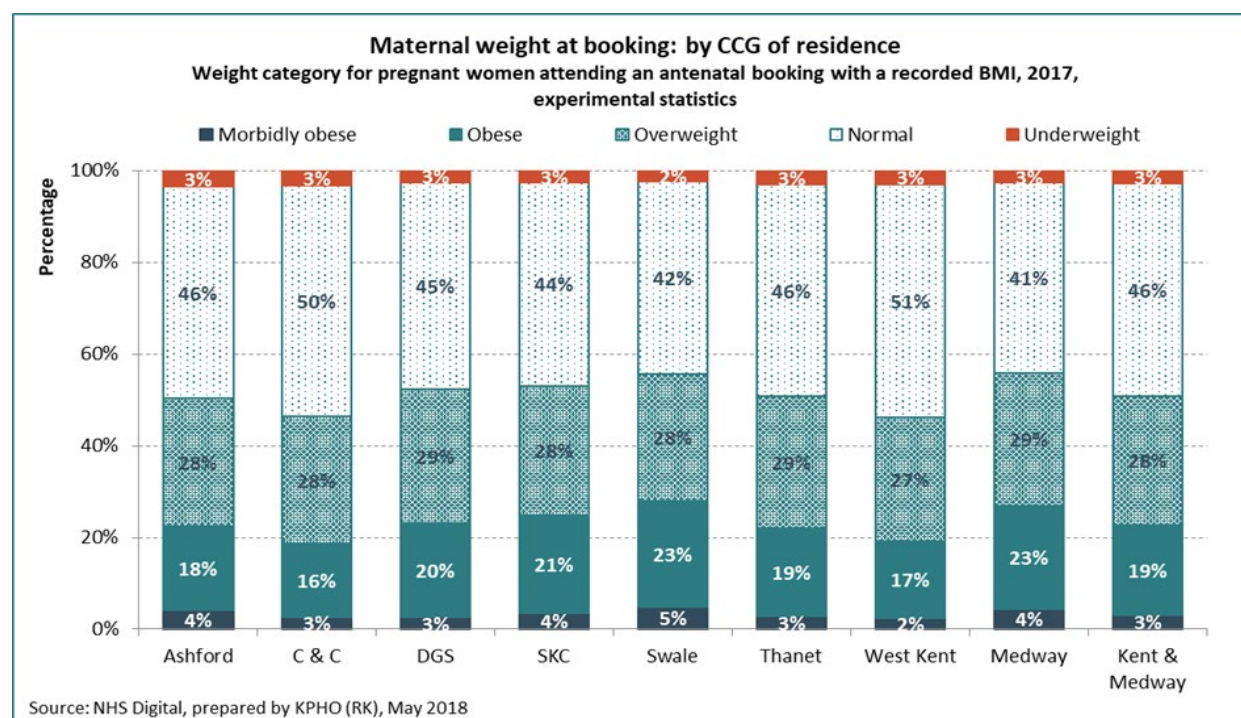
- Swale (28% in 2017)
- Medway (27% in 2017).

Maternal obesity rates at the time of booking are lower than the Kent and Medway average in:

- Canterbury & Coastal (19% in 2017)
- West Kent (19% in 2017).

The graph below provides a fuller breakdown of distribution of maternal weight across five weight categories.

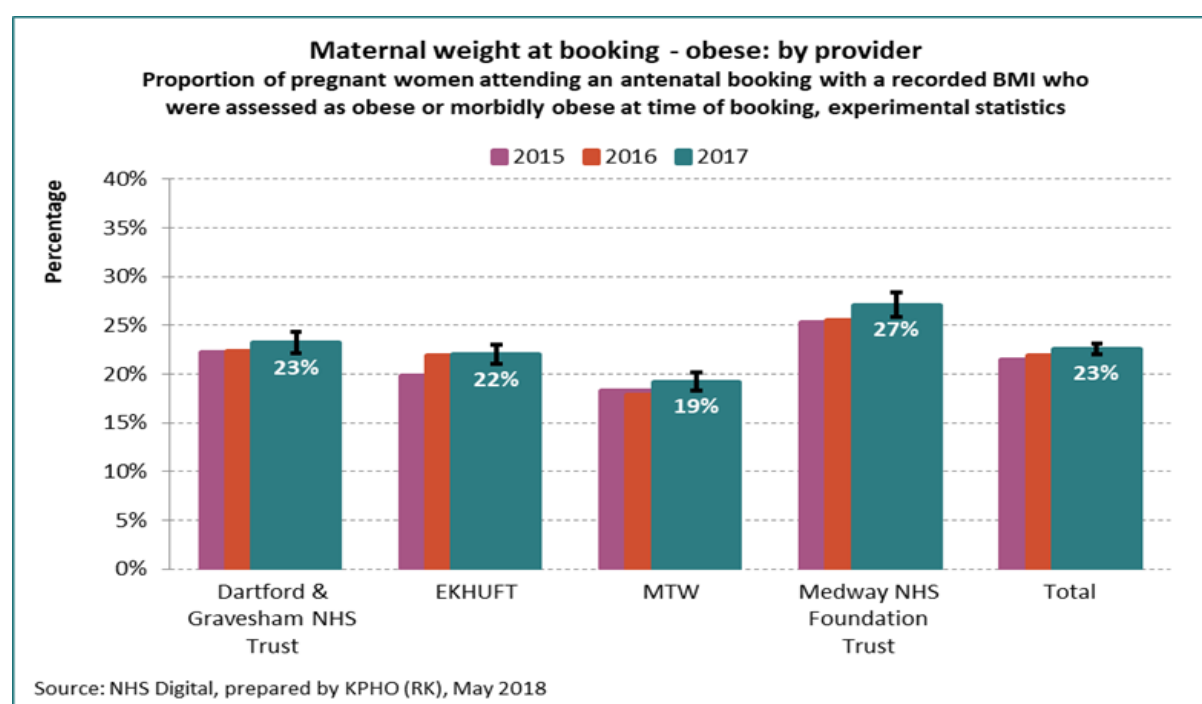
Graph 13: Weight category for pregnant women attending an antenatal booking with a recorded BMI, 2017 by CCG of residence



3.3.3 Maternal Weight by Maternity Trust Provider

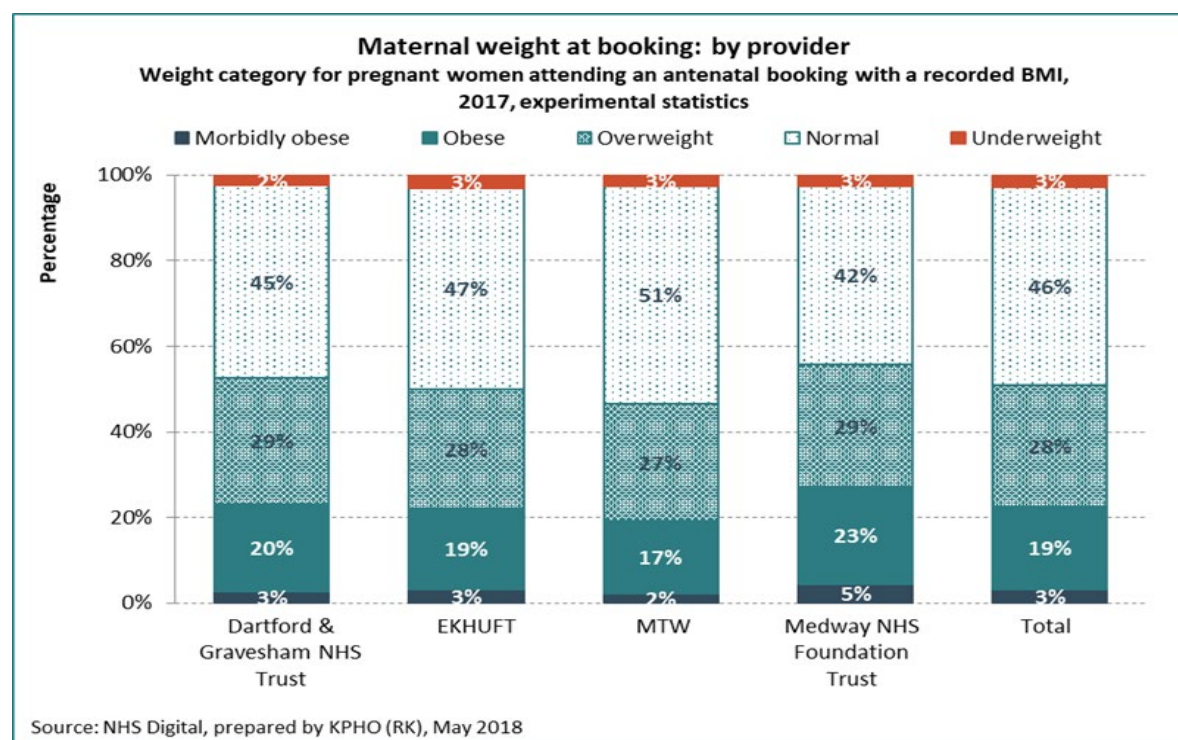
The graph below provides an analysis of maternal obesity at the time of booking by provider.

Graph 14: Proportion of pregnant women attending an antenatal booking with a recorded BMI who were assessed as obese or morbidly obese at time of booking by maternity trust provider 2015-2017



Maternal obesity rates at the time of booking are higher than the Kent and Medway average for women under the care of Medway NHS Foundation Trust (MFT), and below the Kent and Medway average for those under the care of Maidstone & Tunbridge Wells NHS Trust (MTW).

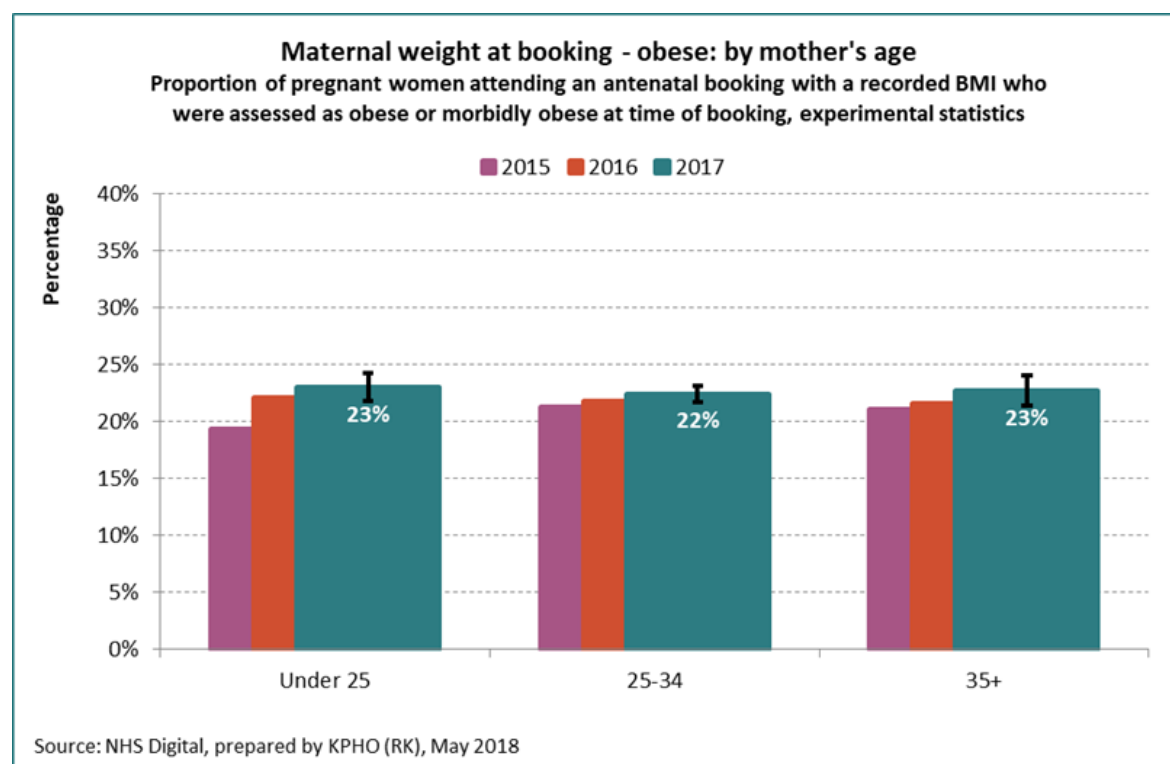
Graph 15: Weight category for pregnant women attending an antenatal booking with a recorded BMI, by maternity trust provider, 2017



3.3.4 Maternal Weight by Age of Pregnant Woman

The graph below provides an analysis of maternal obesity at the time of booking by the age of the mother and suggests that obesity rates are similar regardless of mother's age. It should be noted that research suggests that age over 35 years is a predictive factor for maternal obesity.

Graph 16: Proportion of pregnant women attending an antenatal booking with a recorded BMI who were assessed as obese or morbidly obese at time of booking by age of pregnant woman, 2015-2017

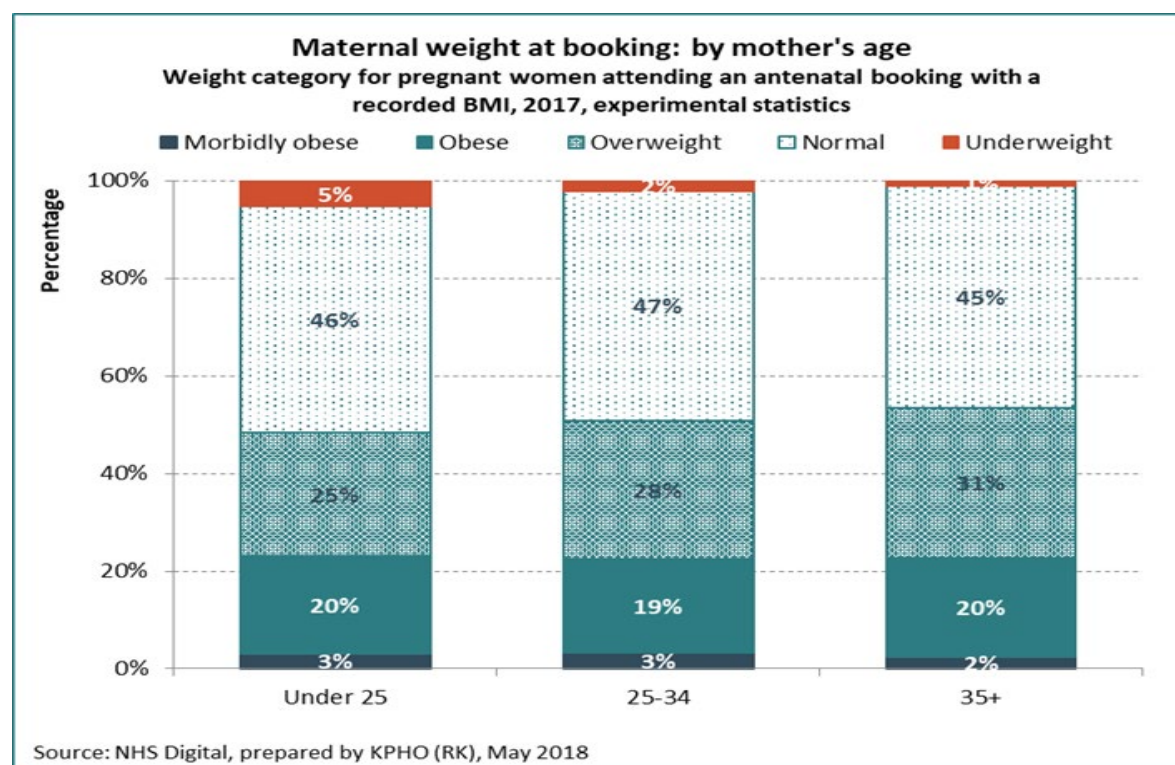


The graph below provides a fuller breakdown of distribution of maternal weight across five weight categories.

Nationally PHE⁶⁵ have found that younger pregnant women tend to be underweight at booking appointment, with 1 in 10 under 18-year olds being underweight and 1 in 3, 18 – 24-year olds being overweight or obese. The proportion of pregnant under 18-year olds found nationally to be underweight at ante natal booking may be a reflection of the method used to calculate BMIs in this age group.

⁶⁵ PHE [2018] Health of women before and during pregnancy: health behaviours, risk factors and inequalities https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727735/Health_of_women_before_and_during_pregnancy_national_analysis_of_the_MSDS_booking_data.pdf

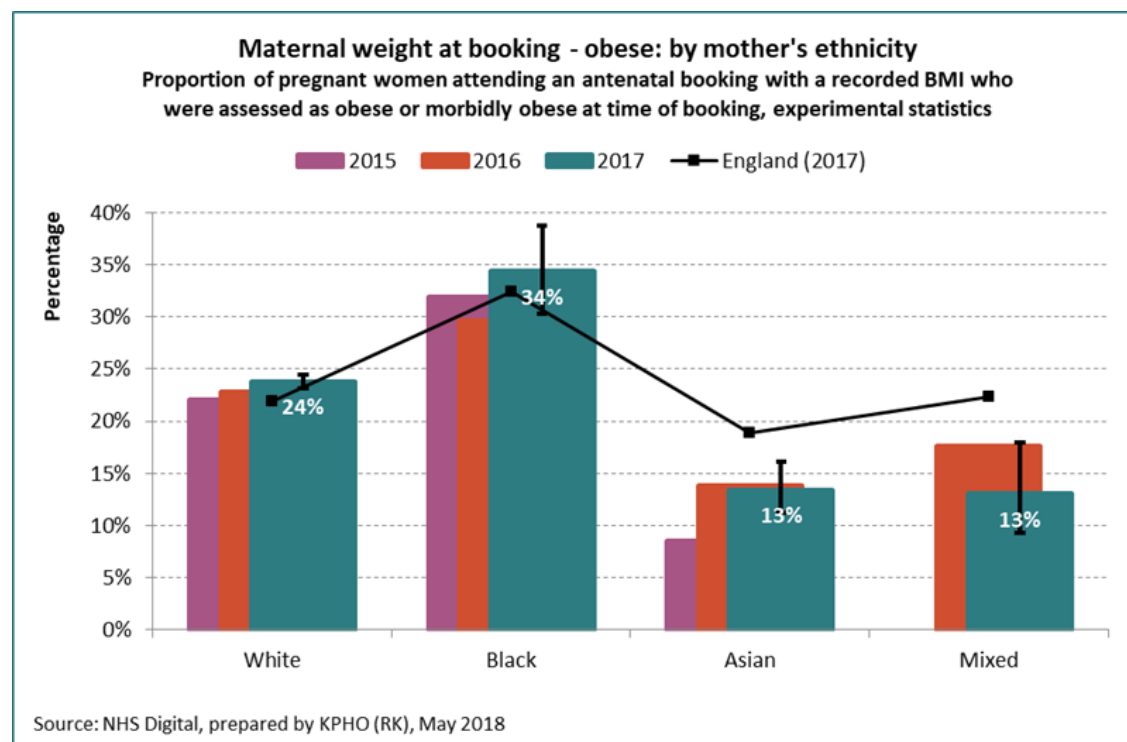
Graph 17: Weight category for pregnant women attending an antenatal booking with a recorded BMI, by the age of pregnant woman, 2017



3.3.5 Maternal Weight by Ethnicity

The graph below provides an analysis of maternal obesity at the time of booking by the mother's ethnicity.

Graph 18: The proportion of pregnant women attending an antenatal booking with a recorded BMI who were assessed as obese or morbidly obese at time of booking by ethnicity of pregnant woman, 2015-2017

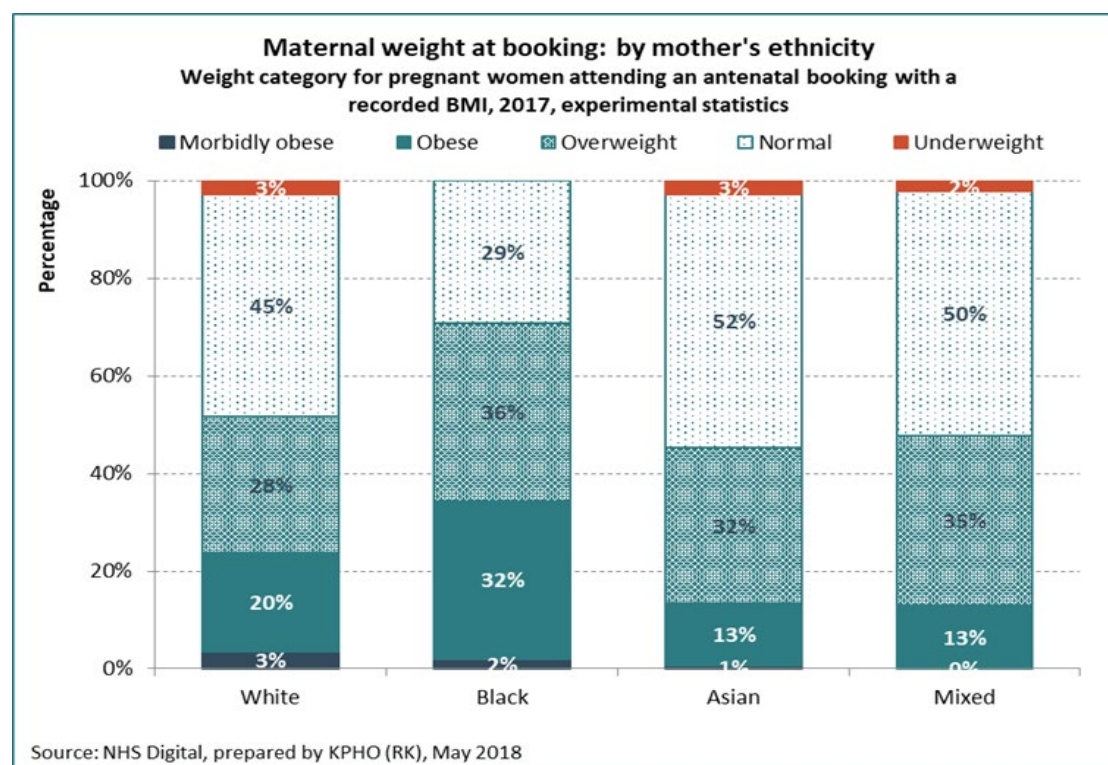


Maternal obesity rates at the time of booking are higher than the Kent and Medway average amongst black mothers, but lower amongst Asian mothers. This is a similar pattern to that seen nationally. Conversely nationally⁶⁶ 27% of black women and 28% women categorised as 'other' ethnicity in the first 6 months of 2017 booked after 13 weeks of pregnancy. This would suggest that the measure taken is not comparative and may be biasing the reporting.

The graph below provides a fuller breakdown of distribution of maternal weight by ethnic group across five weight categories.

⁶⁶ PHE [2018] Health of women before and during pregnancy: health behaviours, risk factors and inequalities https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727735/Health_of_women_before_and_during_pregnancy_national_analysis_of_the_MSDS_booking_data.pdf

Graph 19: Weight category for pregnant women attending an antenatal booking with a recorded BMI, by ethnicity of the pregnant woman, 2017



3.4 Child Obesity

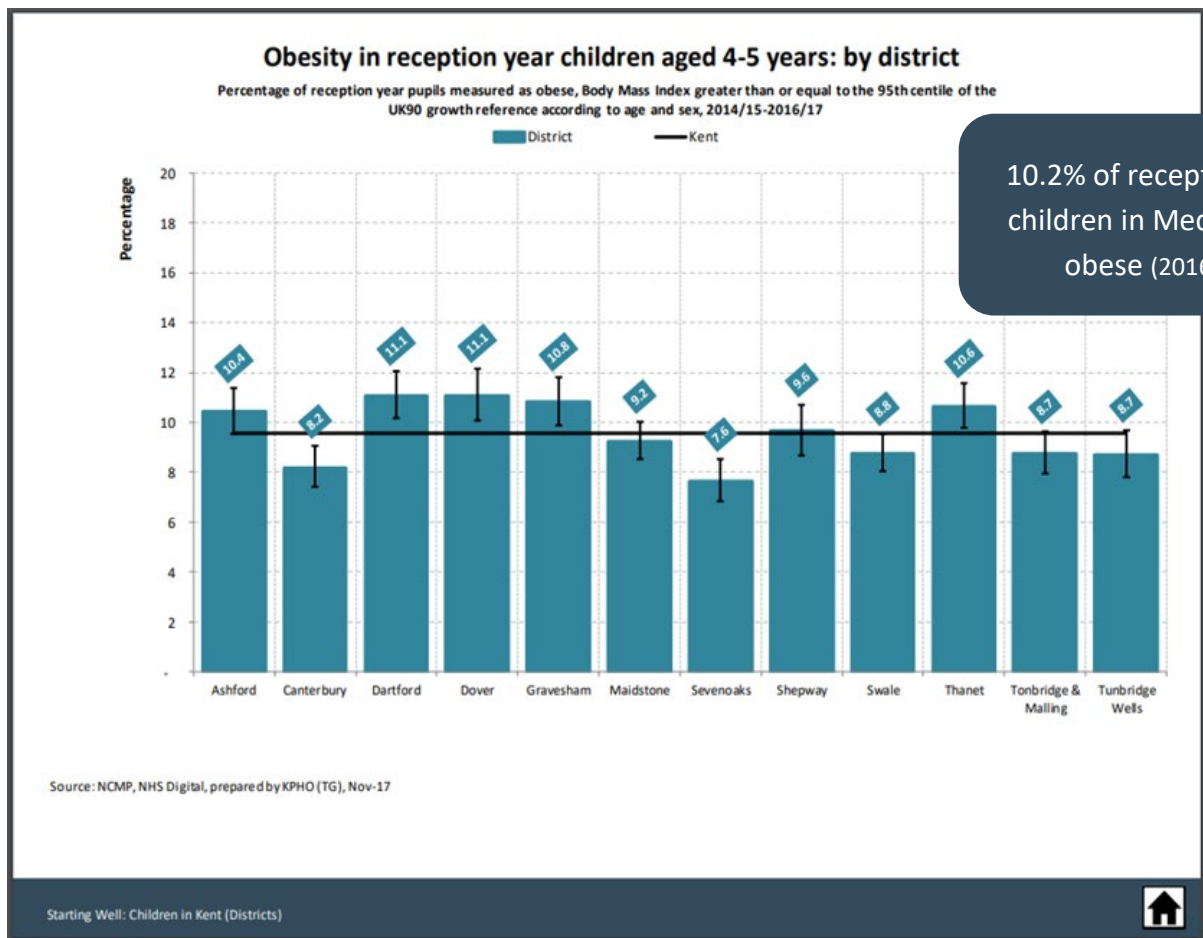
As previously discussed, different studies are showing clear associations between maternal obesity and the weight of offspring at age 3, age 7 and older. Looking at maternal obesity in 2017 Kent [21.8%] and Medway [27%] are above the England average of 21.2%. In 2016/17 the percentage of reception children measured as obese in Kent and Medway was higher than the England average 8.5% at 10.3% and 10.2% respectively. Research⁶⁷ shows that overweight/obese mothers had a greater mean of children with higher BMIs, waist circumference, subcutaneous and visceral fat, when compared to offspring of normal weight mothers.

Results from the National Child Measurement Programme (NCMP) for children resident in Kent attending Kent primary schools also highlight Canterbury, Sevenoaks, and Tunbridge Wells as Districts with lower levels of obesity in both year R and year 6⁶⁸.

⁶⁷ Kaar, J. et al. (2014) "Maternal Obesity, Gestational Weight Gain, and Offspring Adiposity: The Exploring Perinatal Outcomes among Children Study", The Journal of Pediatrics, 165(3), pp. 509-515. doi: 10.1016/j.jpeds.2014.05.050

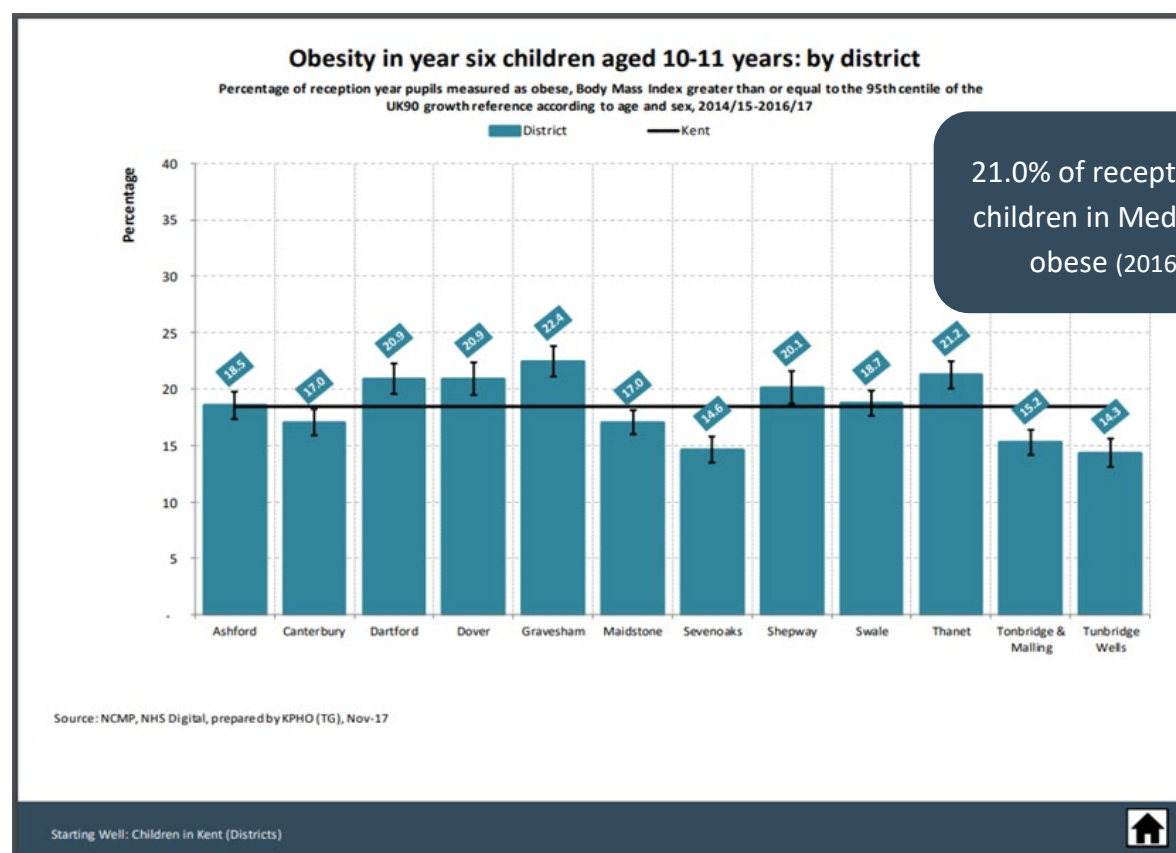
⁶⁸ https://www.kpho.org.uk/_data/assets/pdf_file/0007/45844/Children-District.pdf

Graph 20: Percentage of reception year pupils measured as obese. BMI greater than or equal to the 95th centile of the UK90 growth reference according to age and sex 2014/15 – 2016/17 by district



10.2% of reception year children in Medway are obese (2016/17)

Graph 21: Percentage of year 6 pupils measured as obese. BMI greater than or equal to the 95th centile of the UK90 growth reference according to age and sex 2014/15 – 2016/17 by district

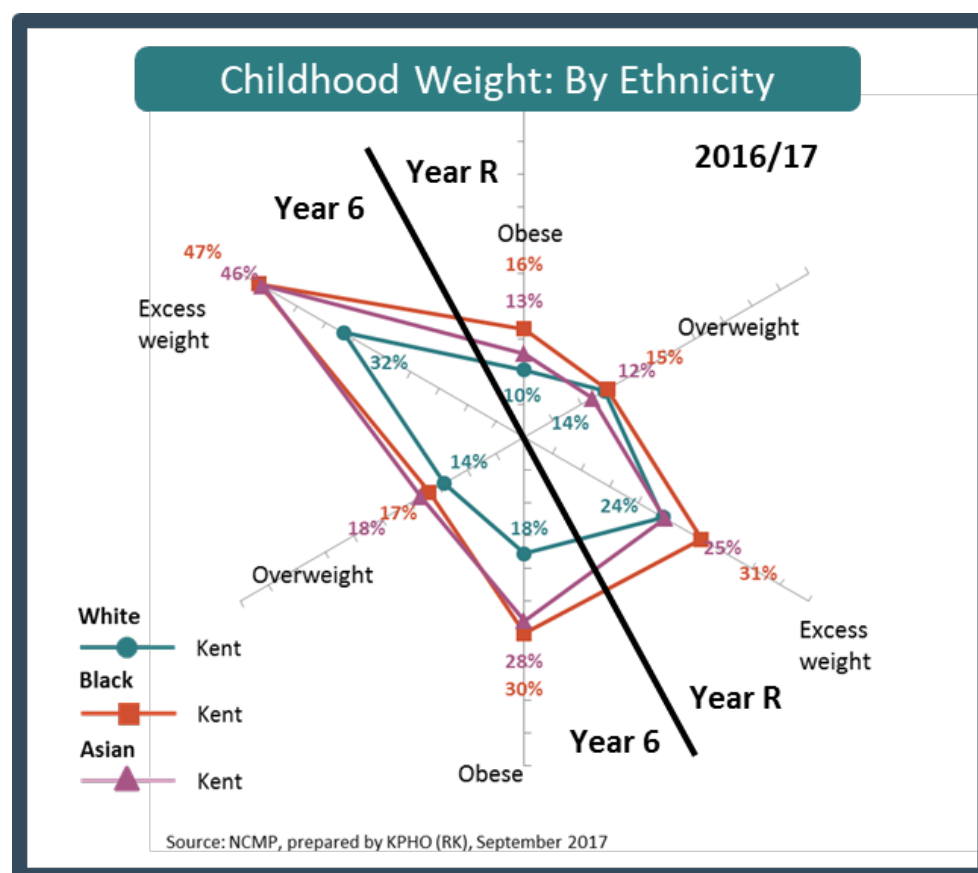


21.0% of reception year children in Medway are obese (2016/17)

Results from the National Child Measurement Programme (NCMP) for children resident in Kent attending Kent primary schools again highlights Black children are more likely than their white counterparts to be obese, but also Asian children. Wider analysis has found ethnic disparities to be smaller between the sexes in year R than in Year 6 ⁶⁹.

⁶⁹ https://www.kpho.org.uk/_data/assets/pdf_file/0009/75546/NCMP-Equity-201617.pdf

Graph 22: Spider graph depicting weight category of children years R and 6 by ethnicity in Kent 2016/17



3.5 Adult Population Weight

3.5.1 Probable unhealthy weight

There is no specific data found in the public domain regarding eating disorders. Current presentation is an estimated prevalence of eating disorders as a percentage of the population aged 16 and over. This is based on information from 2012 and suggests the Kent 6.7% and Medway 6.6% are the same as the England average of 6.7%⁷⁰

Reported studies have estimated that approximately 7% of pregnant women have an eating disorder and found in one study that 25% of women displayed problems with eating in pregnancy. Earlier graphs suggested that approximately 3% of pregnant women in Kent and Medway were recorded in 2017 as having an underweight BMI.

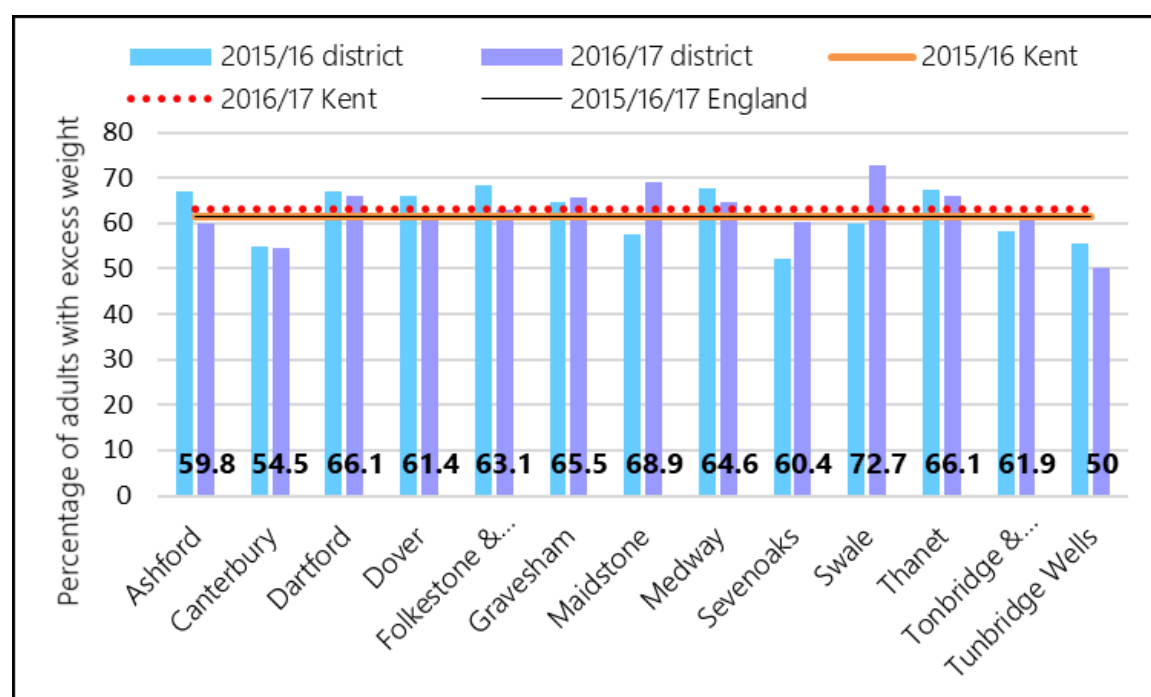
3.5.2 Excess weight in the adult population aged 18 and over

Excess weight levels amongst all adults' highlights increasing percentages in Swale and Maidstone districts along with Medway, Thanet and Gravesham districts being higher than England and Kent average levels of overweight/obesity. Although this is not a comparable

⁷⁰ PHE [2019] Differences in child obesity by ethnic group <https://www.gov.uk/government/publications/differences-in-child-obesity-by-ethnic-group/differences-in-child-obesity-by-ethnic-group>

timeframe to the maternal obesity data set or national child measurement programme data presented by district, some observations can be made. Maternal obesity is highest in the districts of Medway, Gravesham, Dartford, Folkestone and Hythe. Those districts with higher percentages of morbid maternal obesity are Swale 5% and Medway, Folkestone & Hythe and Ashford with 4%.

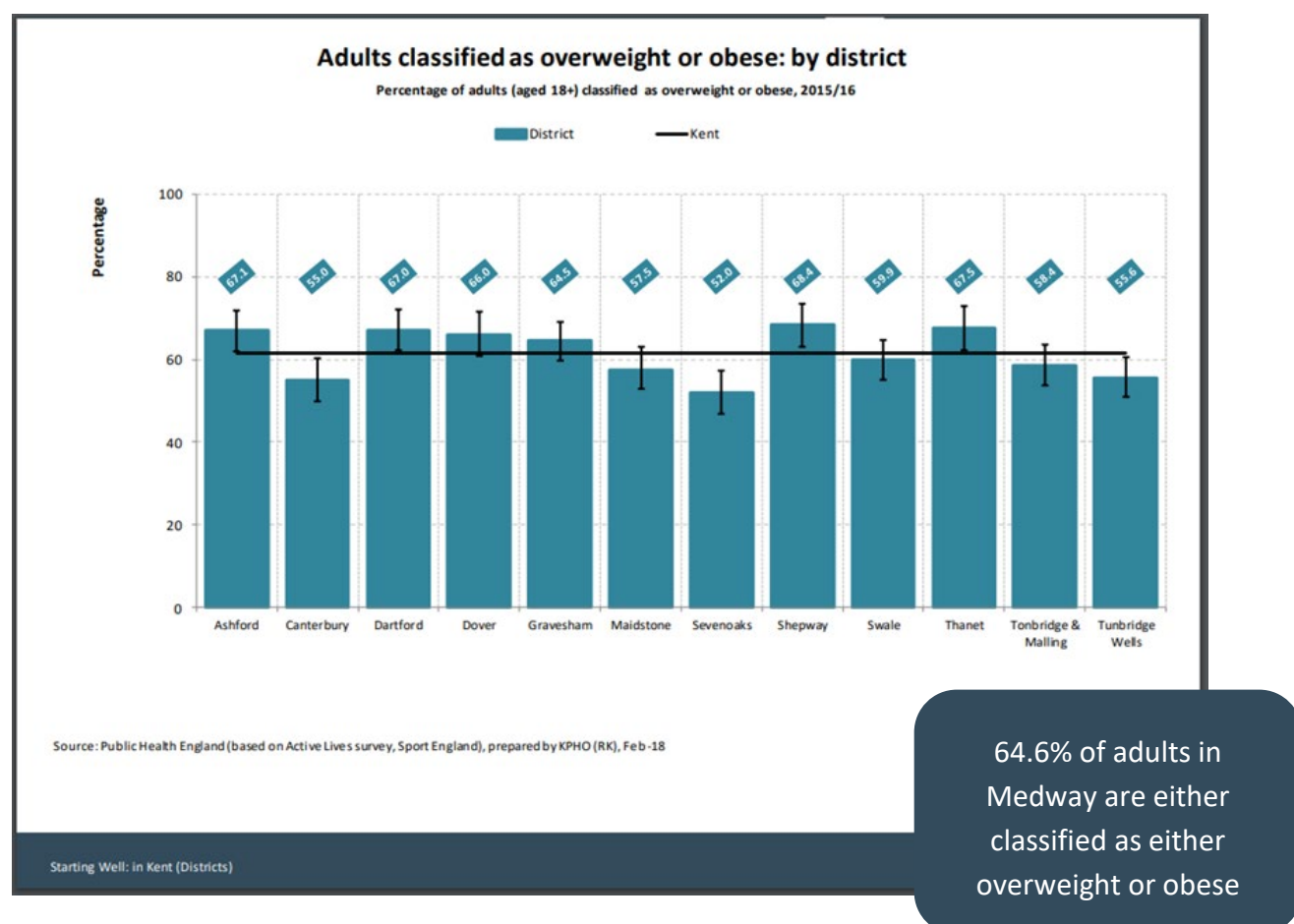
Graph 23: Percentage of adults aged 18 and over classified as overweight or obese by districts in Kent 2015/16 and 2016/17



Source: PHE fingertips⁷¹

⁷¹ <https://fingertips.phe.org.uk/profile/physical-activity/data#page/0/gid/1938133001/pat/6/par/E12000008/ati/102/are/E10000016>

Graph 24: Adults [aged 18 +] classified as overweight or obese by district 2015/16

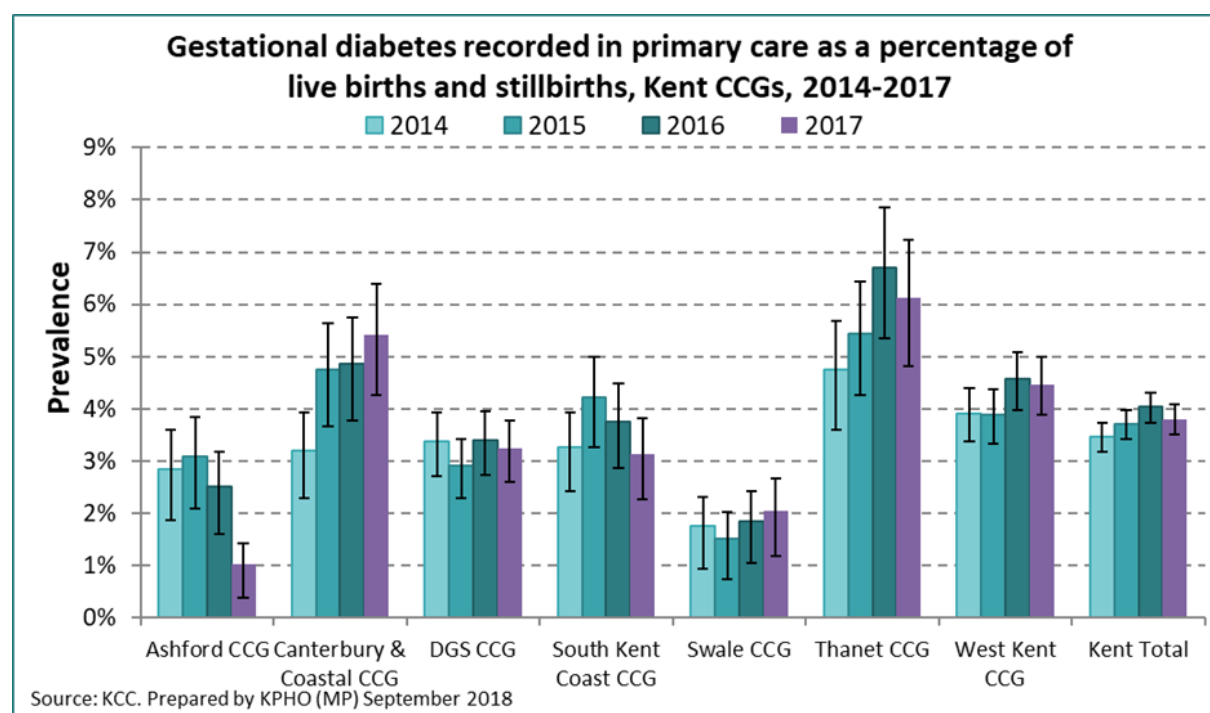


The local prevalence of gestational diabetes has been identified through exploration of the Kent Integrated dataset. The methodology is outlined in appendix 5.

99% of read coding activity in the KID that could be linked to diabetes in pregnancy was in 2 codes - 'gestational diabetes mellitus' (47%) or 'Diabetes mellitus in pregnancy' (52%). It was not possible to link pregnancy to diabetes status in other ways in the KID as the pregnancy and birth read codes were not sufficiently completed.

Swale CCG appears to be unusually low considering the deprivation profile and the background prevalence of diabetes in the population. It is unclear why this is, it may be due to coding quality, or a reporting issue but this has not been investigated. Please note that these results may not be directly comparable to published prevalence rates, but they are similar.

Graph 25: Prevalence of GDM by CCG in Kent, 2014-2017



The recorded gestational diabetes prevalence in the KID was significantly higher than Kent in Thanet CCG for all 4 years, and in Canterbury & Coastal CCG in 2017, and significantly lower in Swale CCG for all 4 years, and Ashford CCG from 2016 and 2017. Overall, the recorded Kent prevalence for combined years 2014 to 2017 was 3.75% (UCI 3.90% LCI 3.61%). This is illustrated for the CCGs in the figure below.

Figure 6: Prevalence of recorded gestational diabetes by CCG in Kent, 2014-2017

Combined	2014	2015	2016	2017	2014-2017
Ashford CCG	2.85%	3.08%	2.51%	1.02%	2.36%
Canterbury & Coastal CCG	3.21%	4.75%	4.86%	5.42%	4.56%
DGS CCG	3.37%	2.92%	3.39%	3.24%	3.23%
South Kent Coast CCG	3.27%	4.22%	3.76%	3.13%	3.60%
Swale CCG	1.76%	1.51%	1.85%	2.05%	1.79%
Thanet CCG	4.75%	5.45%	6.71%	6.13%	5.75%
West Kent CCG	3.92%	3.89%	4.57%	4.47%	4.21%
Kent Total	3.46%	3.71%	4.04%	3.80%	3.75%

Information on gestational diabetes is not known through primary care codes for Medway residents. The local maternity service data would indicate that of those pregnant women who gave birth at Medway Foundation NHS Trust in 2017 3.44% were detected with gestational diabetes.

The increase in the prevalence of obesity amongst adults and the ethnic diversity of the population would suggest that the incidence of diabetes in pregnancy is underestimated

and under reported. This is reflected in meta-analysis by Eades et al⁷² who found European prevalence to be 5.4% in the pregnant population.

3.5.3 Rates of pre-eclampsia

There are currently no accessible data sets which would provide information to calculate the rates of pre-eclampsia which is a combination of high blood pressure and protein in the urine in pregnancy. That said preeclampsia is common, affecting between 2 and 8 in 100 pregnancies with a smaller number developing severe pre-eclampsia.⁷³ There are a number of risk factors for pre-eclampsia, one of which is that pregnant women with a BMI 35 and over are at increased risk of compared to those with a healthy weight BMI

3.5.4 Rates of caesarean section

Rates of caesarean sections are rising in line with increasing BMI levels.⁷⁴ There is increased risk [two – four times] of postoperative wound infection amongst women with a BMI 45 and over⁷⁵. Findings from review of studies⁷⁶ suggests that the rise in caesarean section rates are aligned to the increase of BMI levels. Anecdotal information suggests that clinicians have also observed this locally.

Analysis of the caesarean section data for the maternity trusts in Kent and Medway indicate that there has been a significant increase in the rates of caesarean section [planned and emergency] over the timeline 2013/14- 2017/18 in EKHUFT and MFT whereas rates in MTW and DG NHS Trust have remained similar. The average rate of change per year was 90 and 58 respectively over the time period. This equates to an annual percentage change of 1.37% increase in EKHUFT and 1.12% in MFT. The graph below provides pictorial demonstration of these changes.

⁷² <https://www.ncbi.nlm.nih.gov/pubmed/28531829>

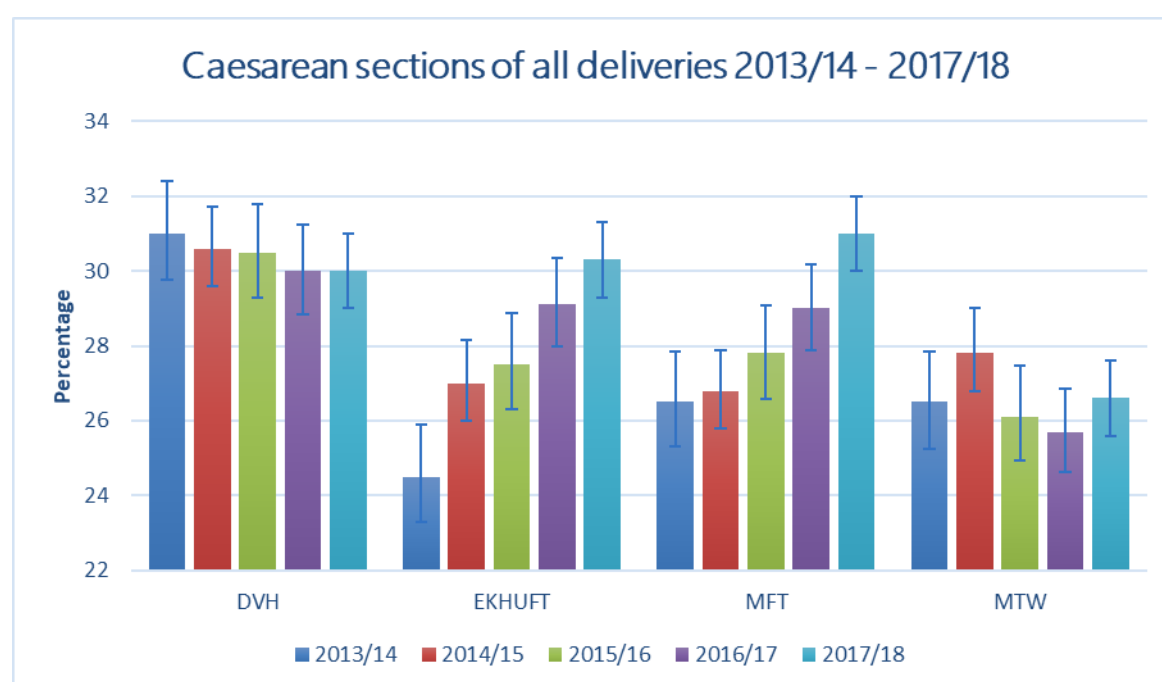
⁷³ RCOG 2012 <https://www.rcog.org.uk/globalassets/documents/patients/patient-information-leaflets/pregnancy/pi-pre-eclampsia.pdf>

⁷⁴ <https://www.rcm.org.uk/learning-and-career/learning-and-research/ebm-articles/obesity-pregnancy-outcomes-and-caesarean>

⁷⁵ Cited in Poston et al [2016] 'Preconceptional and maternity obesity: epidemiology and health consequences' *The Lancet* [4] 1025-1036

⁷⁶ 'Obesity, pregnancy and caesarean section: a structured review of the combined literature' [2013] <https://www.rcm.org.uk/learning-and-career/learning-and-research/ebm-articles/obesity-pregnancy-outcomes-and-caesarean>

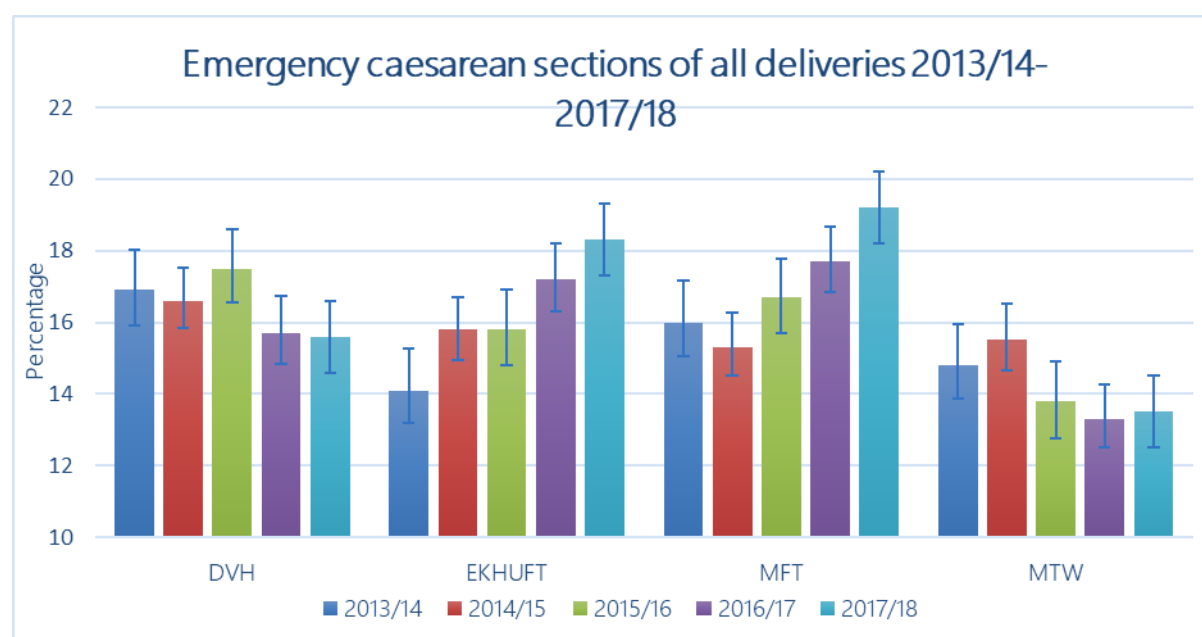
Graph 26: Caesarean section of all deliveries in Kent and Medway 2013/14- 2017/18



Source: NHS digital

Analysis of the emergency caesarean section data for the maternity trusts in Kent and Medway indicates that there has been a significant increase in the rates of emergency caesarean section over the timeline 2013/14- 2017/18 in EKHUFT and MFT whereas rates in MTW and DG NHS Trust have remained similar.

Graph 27: Emergency caesarean sections of all deliveries in Kent and Medway 2013/14- 2017/18



Source: NHS digital

These outcomes highlight the need to support women to be a healthy weight prior to pregnancy whether a first or subsequent one. The opportunity for consistency of messaging and tangible support to women postnatally can be achieved. The outcomes of forthcoming research will help guide this locally.

- Approximately 3% of pregnant women in Kent and Medway CCGs were classified as underweight at the antenatal booking appointment.
- The proportion of pregnant women classified as morbidly obese at booking ranged from 5%- 2% across the trusts in Kent and Medway.
- The proportion of late antenatal booking is highest amongst black women – and more black pregnant women are classified as obese or morbidly obese at booking
- The trusts with the increase in caesarean sections is observed in those trusts where the proportion of pregnant women classified as morbidly obese at booking is highest

4. National Service standards and local implementation

4.1 National Standards

NICE guidance [2010] PH 27 Weight management before, during and after pregnancy

It recommends that at the booking appointment midwifery staff explain to women with a BMI of 30 or more how this poses a risk, both to their health and the health of the unborn child.

NICE continues that at booking appointment staff offer women with a BMI of 30 or more should be offered a referral to a dietitian or appropriately trained health professional for assessment and personalised advice on healthy eating and how to be physically active.

Use BMI percentile charts for pregnant women under 18years accessible at https://www.rcpch.ac.uk/sites/default/files/Girls_2-18_years_growth_chart.pdf⁷⁷ to plot and calculate category of BMI.

RCOG and CAMCE⁷⁸

Women with a booking BMI of 30 or more should be referred to a consultant obstetrician to enable a discussion about possible intrapartum complications and management strategies for these.

RCOG [2018]⁷⁹ Care of women with obesity in pregnancy

This recently published guidance refers to healthy weight and pre-conception care. There is no advice on appropriate gestational weight gain instead recommending healthy dietary advice. Reweighing in the third trimester is recommended.

NICE guidance [2014] PH46 Assessing BMI and waist circumference...

This guidance recommends that BMI at booking does not rely on self-reporting of height and weight

NICE antenatal care [2012]⁸⁰

Women should be offered testing for gestational diabetes. Pregnant women with a BMI of 40 or more should be offered a consultation with an obstetric anaesthetist as well as an

⁷⁷ <https://www.nhs.uk/Tools/Pages/Healthyweightcalculator.aspx>

⁷⁸ Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries. Management of women with obesity in pregnancy. Royal College of Obstetricians and Gynaecologists and Centre for Maternal and Child Enquiries , 2010.
<https://www.rcog.org.uk/globalassets/documents/guidelines/cmacercogjointguidelinemanagementwomenobesitypregnancy.pdf>

⁷⁹ RCOG Guidance on the Care of women with obesity in pregnancy 2018
<https://obgyn.onlinelibrary.wiley.com/doi/epdf/10.1111/1471-0528.15386>

⁸⁰ National Institute for Health and Care Excellence. Antenatal care. NICE, 2012.
<https://www.nice.org.uk/guidance/gs22>

assessment in the third trimester of pregnancy to identify any manual handling requirements for childbirth.

4.2 Local implementation

The local interpretation of guidelines from the National Institute of Clinical Excellence [NICE] and the Royal College of Obstetrics and Gynaecology [RCOG] is variable across the trusts. Some of these decisions around interpretation are based on capacity within the system. For example, one trust is unable to undertake the volume of GTT which following the NICE guidance would involve, because of the considerable proportion of women who fit in the criteria of BMI 30 or greater.

Utilising core skills of community maternity practitioners to effectively hear foetal movement, palpate fundi, or take blood pressure, amongst the obese maternal population is acknowledged. For example, the RCOG require appropriate cuff size be used to measure blood pressure and cuff size documented in medical records or ultrasound to assess fundal height when pregnant women have a BMI over 35. This has increased reliability on technical and medical interventions or other resources in secondary care to manage the care of obese women in pregnancy.

4.3 Local implementation of NICE or RCOG guidance

	Guidance	Dartford and Gravesham NHS Trust	East Kent Hospital Foundation NHS Trust	Medway Foundation NHS Trust	Maidstone & Tunbridge Wells NHS Trust
Gestational diabetes screen [GST]	NICE All pregnant women with a booking BMI ≥ 30 kg/m ² or greater should be screened for gestational diabetes [GD] RCOG	BMI ≥ 35 at 28/52 or if previous GD or large weight baby GTT also at 16/52	at 30/52 – place of birth	BMI ≥ 30 with any of the NICE risk factors	BMI > 31 weight under control BMI > 35 if no other co morbidities at 28/52
Stages weighed in pregnancy	'Measure weight and height at the first contact with the pregnant woman. Only weigh again if clinical management can be influenced or if nutrition is a concern' NICE	booking <i>Eastern European weighed every visit</i>	booking, 3 rd trimester & admission	booking, 28/52 and recalculate BMI at 36/52 if increased by 20 lbs change plan	booking
Referral to dietician	'Offer women with a BMI of 30 or more at the booking appointment a referral to a dietitian or appropriately trained health professional' NICE	dietician input	BMI ≥ 30	BMI ≤ 19	BMI ≤ 17
Referral to consultant obstetrician	BMI ≥ 30	BMI ≥ 35	BMI ≥ 35	BMI ≥ 40	BMI ≥ 35
Referral to consultant anaesthetist	BMI ≥ 40 RCOG	BMI ≥ 40	BMI ≥ 40	BMI ≥ 45	BMI ≥ 40
Availability of bariatric beds	RCOG Maternity units should have a central list of all facilities and equipment required to provide safe care to pregnant women with a booking BMI ≥ 30 kg/m ² or greater.	The assessment did not ask whether there was central list of all equipment and facilities but sought to understand availability of bariatric equipment,			
BMI measure for those under 18 years of age	NICE require use of the percentile chart	No respondent identified use of the percentile chart as per NICE guidance.			
Delivery in a birthing centre with midwifery led care	-	BMI ≤ 30	Primips BMI ≤ 35 Multips BMI ≤ 38 with no comorbidities	BMI 30 with first and up to BMI 35 with subsequent. Not if hypertensive, DVT, shoulder dystocia	Primate BMI ≤ 35 BMI ≤ 39
Induction of labour	-			at 40/52 Black African or Asian women	

There needs to be the following;

- Review and consistent implementation of NICE guidelines
- Implementation of RCOG guidance

5. What can we do about it? Promotion and preparation for a healthy weight in pregnancy

5.1 Preparation


5.1.1 Preconception care

Illustration 4: Preconception health


Preconception health

Describes “the health of women and men during their reproductive years, which are the years when they can have a child”⁷

Good preconception health encompasses two main concepts⁸



1. Planning pregnancy
Enabling women and their partners to choose if and when to start or grow their families



2. Fit for pregnancy
Recognising that many pre-pregnancy health behaviours and risk factors are amenable to change

Source: PHE⁸¹

Whilst recognising that many pregnancies are unplanned using the opportunities presented to prepare women conceiving for the first time or subsequent occasions is fundamental. Consultations with sexual health services and general practice to provide contraception offers good opportunities to delivery key preconception messages. There is evidence of extending intervals between first sexual intercourse and childbirth with women who on average spend 30 years preventing unintended pregnancy.

The CMO in her report in 2015⁸² commented that the ‘current delivery of pre-conception care by health professionals is patchy, and women’s compliance with pre-conception health guidelines remains low even among women with a clear intention of becoming pregnant, revealing multiple missed opportunities for improving maternal and child health.’ These

⁸¹ PHE [2018] Making the case for Preconception Care

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729018/Making_the_case_for_preconception_care.pdf

⁸² DH [2015] The Health of the 51%: Women CMO report 2014

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595439/CMO_annual_report_2014.pdf

opportunities include removal of a contraceptive device or implant, the need for emergency contraception, as part of the discussion on weight when prescribing the contraceptive pill as well as those specifically requesting pre-pregnancy advice. It is particularly important to use these opportunities with those who have existing health conditions including mental health disorders and diabetes. In some circumstances it is appropriate to advise the avoidance of becoming pregnant, for example, one review⁸³ recommends that pregnancy should be avoided during rapid weight loss such as post bariatric surgery until bodyweight has stabilised.

The approach proposed by the CMO in her report, and which subsequent studies have highlighted, is the need to support women to have a healthy weight during the reproductive years in order to protect themselves and their future children from the impact of having a high maternal weight. Providers of contraception can improve preconception health through appropriate counselling. Recommended counselling⁸⁴ includes:

- Raising awareness of reduced fertility and risks to pregnancy associated with excess weight. For example, lower fertility rates and risk of early miscarriage amongst obese pregnant women
- Advice on lifestyle interventions to improve pre-pregnancy health by increasing motivation and changing attitudes. Greater success may be experienced where the messages promote health not just bodyweight. One systematic review found the prevalence of depression higher amongst obese pregnant women to those of normal weight [33% v 23%].
- Folic acid supplementation

The bank of evidence demonstrating the intergenerational effects of maternal excess weight on children has continued to grow since publication of this CMO report.

5.1.2 Promotion of contraception - when and how to use it

The decision to use contraception is a personal one but a decision which can be informed through improved understanding of contraception and contraceptives.

Providing clear unambiguous information about the different types of contraception, when and how to use them through the local sexual health websites and social media will help support women across their reproductive years.

Providing clear information about the contraceptives available to women postnatally including those fully or partially breast feeding, through the local sexual health websites,

⁸³ Maggard MA, Yermilov I, Li Z et al Pregnancy and fertility following bariatric surgery: a systematic review JAMA 2008 cited in Wan, Schmidt, Wing, McIntyre and Cataano [2016] Clinical management of pregnancy in the obese mother, before conception, during pregnancy and post-partum Vol 4 [1037-2049] *The Lancet*

⁸⁴ Wan, Schmidt, Wing, McIntyre and Cataano [2016] Clinical management of pregnancy in the obese mother, before conception, during pregnancy and post-partum Vol 4 [1037-2049] *The Lancet*




from maternity, health visiting and general practice will help inform of the contraception options are available.

Embedding and presenting information about the benefits of planned contraception across the system including in secondary school RSE; youth hubs; 16-18 colleges, universities and tertiary college student welfare departments and messaging systems; general practice plasma screens and websites.

5.1.3 Importance of preconception care

Being aware of and looking after men and women's health and well-being before conception will improve the outcomes for women and babies during pregnancy and post-delivery as outlined below.

Illustration 5: Whole system response to improve preconception care

	<p>Risk factors include:</p> <p>Obesity, adverse childhood experiences, domestic abuse, alcohol, smoking, substance misuse, previous pregnancy complications, migrant health factors, genetic risks</p>
	<p>Healthy behaviours include:</p> <p>healthy diet including folic acid, regular physical activity, planned contraception use, keeping sexual health checks, cervical screens, immunisation up to date, taking care of emotional health</p>
	<p>Social and economic determinants include:</p> <p>education, relationships, housing, employment, finance, community safety,</p>

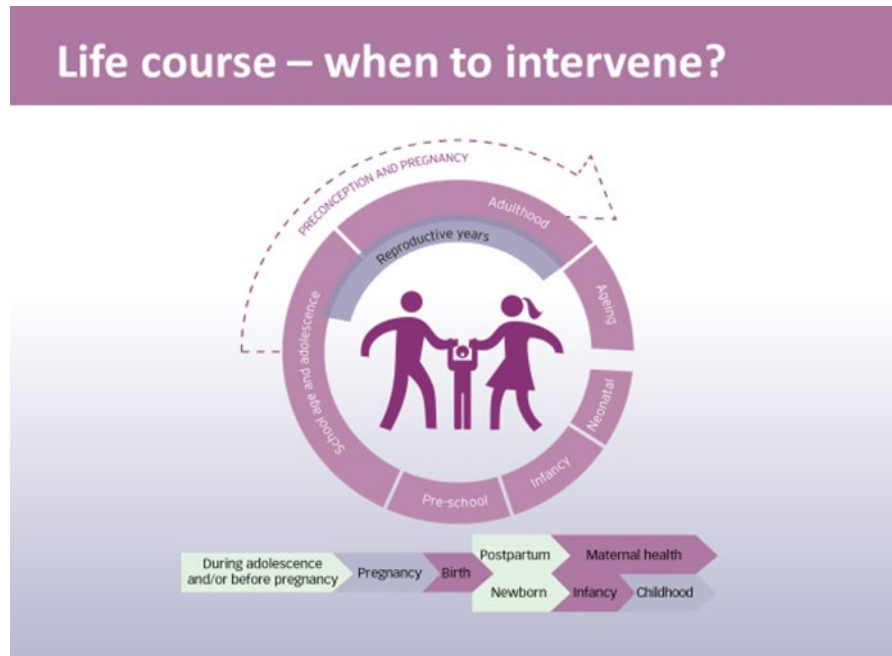
5.1.4 Embedding preconception care across the whole system

Frontline professionals can be supported to deliver preconception care through the development of training tools and resources. These will help support NICE recommendations regarding weight loss programmes post pregnancy and ensure that knowledge and awareness of contraception post-delivery is embedded into practice.

Awareness of having a health weight and sustaining a healthy weight during pregnancies is important. The impact of excess weight has been discussed throughout this assessment and

highlights that preparation, planning and fitness for conception is key. NICE guidelines⁸⁵ advise supporting women with a BMI of 25 kg/m² or more to lose weight before conceiving at a rate per week not exceeding 0.5-1kg.

Illustration 6: Preparing for conception a life course approach

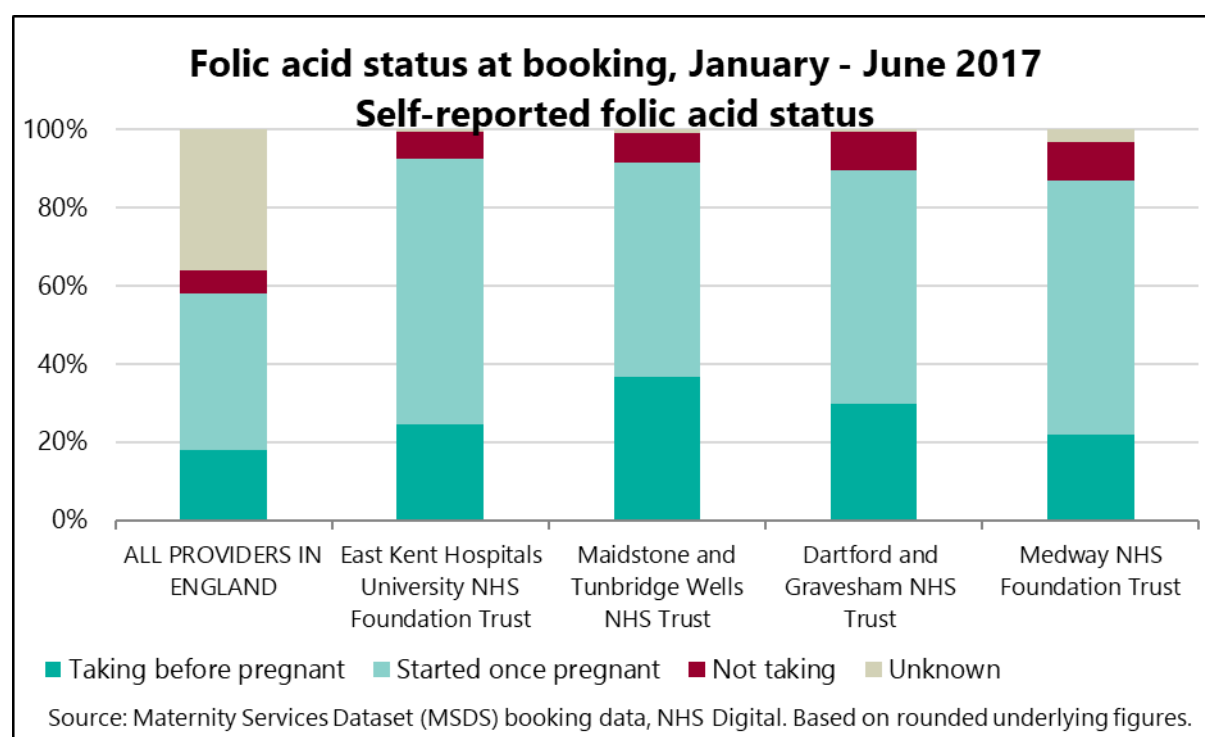


5.1.5 Folic acid

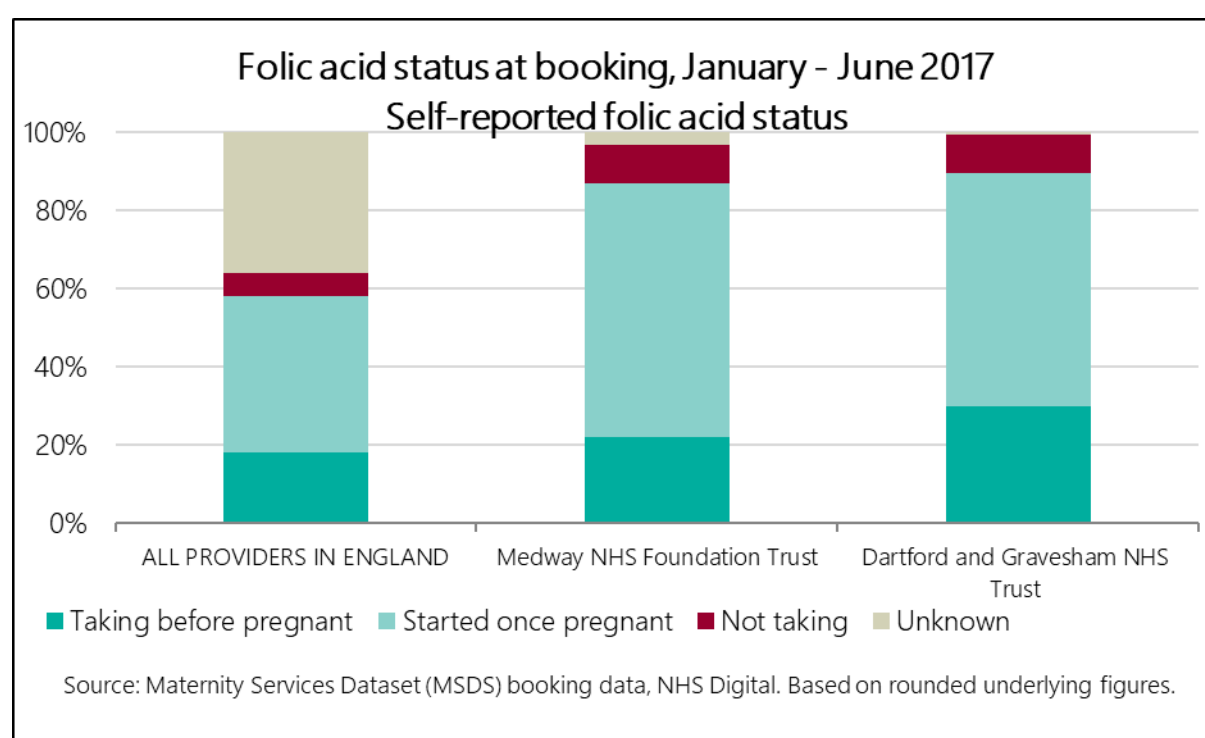
Folic acid 400 micrograms per day is recommended preconception as it can help in the prevention of neural tube defects such as spina bifida. A daily supplement of 5 mg folic acid is advised during the first trimester of pregnancy.

⁸⁵ NICE [2010] Weight management before, during and after pregnancy
<https://www.nice.org.uk/guidance/ph27/resources/weight-management-before-during-and-after-pregnancy-pdf-1996242046405>

Graph 28: Folic acid status at ante natal booking, Kent residents, January – June 2017



Graph 29: Folic acid status at ante natal booking, Medway residents, January – June 2017



5.1.6 Vitamin D

Vitamin D is predominantly accessed through sunlight with very little attributed to diet. Improving awareness of the importance of vitamin D to pregnancy outcomes could encourage more self-awareness about exposure to sunlight. The impact of Vitamin D

deficiency in pregnancy has been widely studied⁸⁶ exploring pre-eclampsia and small for dates, asthma and allergies in infants, caesarean section and bacterial vaginosis to name a few. It has also been recognised that obese pregnant women are at a higher risk of vitamin D deficiency.

Although pregnant women are not screened for Vitamin D deficiency NICE guidance⁸⁷ has been updated to reflect changes made by the scientific advisory committee on nutrition which now recommends that 'an RNI of 10 micrograms of vitamin D per day for pregnant and lactating women and population groups at increased risk of vitamin D deficiency.'⁸⁸

5.2 Conception spacing

Pre-conception care is for all pregnancies with sufficient spacing between pregnancies which allows the body to recover and prepare for a subsequent pregnancy. Locally there are concerns amount the observed numbers of women returning within one year of birth for another delivery. This is a health issue particularly for those women who had excess weight during the previous pregnancy. Pre-pregnancy weight has often not been regained but more likely is that weight gain has been sustained, meaning that the booking BMI is higher and compounds the health risks associated with pregnancy. The risks to delivery are heightened through the: early reopening of a caesarean section wound, additional body weight and development of gestational diabetes. The WHO⁸⁹ recommended over ten years ago adequate birth spacing following live births to be at least 18 months.

- Systematic preconception care has the potential to improve health outcomes of pregnant women and the health of the infant.

⁸⁶ RCOG [2014] Vitamin D in pregnancy https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/vitamin_d_sip43_june14.pdf

⁸⁷ NICE [2012] Antenatal care <https://www.nice.org.uk/guidance/cg62/chapter/1-Guidance#lifestyle-considerations>

⁸⁸ Scientific Advisory Committee on Nutrition (SACN) [2016] Vitamin D and Health https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/537616/SACN_Vitamin_D_and_Health_report.pdf

⁸⁹WHO [2005] https://www.who.int/maternal_child_adolescent/documents/birth_spacing05/en/

| 6. Stakeholder consultation

The methods used to understand the views of providers and commissioners included one to one semi structured interview: face to face or by telephone where face to face was not possible, one trust group discussion and a maternity staff e-survey.

A pilot staff survey was disseminated in June 2018 and was subsequently modified to reflect the findings of the interviews. Publication was delayed as maternity staff were required to undertake at least a further four surveys. A staff survey was sent by email to maternity staff leads on September 27th and closed October 22nd a window of three weeks. A reminder was sent 7 days before close of the survey. A total of 58 surveys were submitted. The survey was republished between November 19th and December 7th providing approx. 6 weeks to participate which produced a total of 103 responses. This represents approximately 8% of the maternity staff workforce. The survey was sent to Canterbury Christchurch university for student midwives to complete but no responses were submitted by this cohort.

Interviews took place between July – October 2018. These have all been undertaken by the same public health specialist.

6.1 Findings

6.1.1 Support for women

Key to understanding the increases in BMI was how women were assessed or weighed at booking and what triggers would identify the need for additional support or referral to other services which the interviews and survey sought to identify.

The interviews found that there is variation in practice in terms of: the BMI levels which will trigger referral to a consultant obstetrician, consultant anaesthetist or dietician; and glucose tolerance testing in relation to weight which varies ranging from BMI 30-35 or the types of support offered.

Different pathways of care are offered to women if a low BMI is identified. These include dietary advice, Vitamin D, eating disorders clinic or pathways and referral to mental health services. A referral did not necessarily translate into service provision.

To the ‘Dietician although they rarely get an appointment following referral’ [for underweight client]

Anecdotal observation was that East European women wanted to weigh themselves very regularly because of their worry about weight gain.

Variation in assessment of BMI

There are a range of venues where height and weight measurements are taken. This includes in the individual’s home, children centres, ante natal clinics and general practice. Calibration of scales was assumed by users.

Some venues from which maternity services provide services do not have scales or height measures. Women weigh themselves or self-report measurements.

Not all services have access to Euroking E3 which calculates populated measurements. BMI is calculated using a range of apps and calculators.

BMI reading triggers need for additional support

Discussing weight with the pregnant woman at the booking appointment was not a priority. ‘Most people are aware of their weight’ or it is highlighted when advised that they will be referred to a consultant obstetrician because of their BMI measure. This varies from BMI 35-40. It was acknowledged that midwives are well placed to offer advice on healthy eating and physical activity but are not always doing so

‘Women are very sensitive about weight and some are annoyed when broaching weight and plan of care for her during pregnancy’

6.2 Staff survey

The maternity staff e-survey was sent to the heads of midwifery services across the four trusts for distribution to staff and to the lead midwifery tutor at Canterbury Christchurch University.

Findings from the responses received:

- The main tool [55%] to calculate BMI at booking is through Euroking 3
- The same tools are used to calculate the BMI of under 18-year olds
- There is very little differentiation made, regarding BMI levels, for those from BAME for interventions e.g. GTT

- Consultant obstetricians are the main referral source for weight management support and 58% respond that this is with a BMI 35 and above although this ranges from 27.5 to 40 and over.
- This contrasts with the responses which suggest that weight management support is most often triggered when a pregnant woman has a booking BMI of 35 [45%] but 7% are for those with a BMI 40 and above. The latter is probably a reflection of the change to practice in Medway midwifery services.

The correct dialogue and approach to use for fear of upsetting them and in order to keep communication channels open with them to maintain good relationship. Training in practical ways we can help them to adhere to healthy diet'

- Midwife weight management support is offered through leaflets on weight management [16%], slimming world [20%], access to online information 'apps' or websites.

13% of staff surveyed state that they do not provide any [weight management] support

- Equipment for weighing and measuring height is not available in all locations where booking takes place. As a consequence, for some, booking weights are undertaken and recorded at a subsequent appointment -an additional appointment or at the 16-week check.
- 21% of respondents are uncomfortable or very uncomfortable about broaching the subject of weight management with pregnant women who are clinically obese and 25% are uncomfortable or very uncomfortable about broaching the subject of weight management with pregnant women who are overweight

as a slim person I find it embarrassing to discuss about raised BMI. I do it because it is our job and to follow guidelines, but I don't like the thought of lowering someone's self-esteem.

Very uncomfortable [midwife 5-10 years]

- Midwives may believe that losing weight in pregnancy is an option
- 59% of respondents had not heard of Making every contact count [MECC] an initiative and cultural shift across the NHS and other organisations

41% of staff would appreciate more information, resources or training on healthy weight to help them in their role. Of these a fifth wanted to know how to have discussions about weight.

6.3 Student midwifery course

Nationally the courses on midwifery training whilst having core elements, present public health issues as optional therefore knowledge and awareness regarding the impact of maternal weight may be different. One local course provider has found that many student midwives have made a choice to look at maternal weight as a part of their course.

6.4 Post-pregnancy insights work

Given the nature of the questions and the emotions that insights with women who have given birth in the last 12 months may evoke, the requirements to prevent harm will necessitate this being undertaken as a clinical audit across the local maternity system. This requires ethical approval so will be undertaken as additional research.

- Midwifery staff require different levels of support to be confident and comfortable to have proactive discussion about weight, healthy eating, and physical activity

| Appendix A

Staff questionnaire



Questionnaire 5
Oct 2018.pdf

| Appendix B

Literature reviews

Maternal obesity



Maternal Obesity
literature review.pdf

Gestational diabetes



HDAS-ST506184-S-1
-medium-180925-11.

| Appendix C

EqIA



2019.21.02 Equality
IA Maternal weight i

| Appendix D

Methodology to identify local levels of gestational diabetes

The two read codes combined together were used as the numerator. It was determined on a per patient basis as on occasion there were multiple instances of both codes being used in the same pregnancy, and on occasion multiple times on the same date. The extracted data was filtered to count 1 result per pregnancy, by firstly determining a single event by activity date, and secondly filtering out results that are within 300 days of an earlier activity date.

The denominator used was recorded live births and stillbirths, and results were grouped by CCG. It was not possible to determine pregnancies or births from the KID as much lower numbers than expected were returned when it was queried.