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## **Weight management during teenage pregnancy: issues to consider when developing appropriate support**

### **Abstract**

Teenage pregnancy is more prevalent in areas of high obesity, compared to areas where obesity levels are low. Risks associated with maternal obesity in pregnant teenagers include preeclampsia and caesarean delivery. To reduce these risks, pregnant teenagers need to be supported to gain a healthy weight in pregnancy. This includes encouraging these women to eat healthily through providing appropriate information including online or smartphone apps in conjunction with face-to-face support. These young women also need encouragement to be physically active. This support must be tailored to the teenage population considering their specific barriers and facilitators to behaviour change. Midwives with the aid of a multi-disciplinary team play a key role in encouraging these healthy behaviours.

### **Keywords**

teenage pregnancy, obesity, gestational weight gain, physical activity, diet

### **Keypoints**

Risks associated with maternal obesity in pregnant teenagers include preeclampsia and caesarean delivery.

Pregnant teenagers need to be supported to eat healthily during pregnancy and be physically active.

This support must be tailored to the teenage population and midwives within a multi-disciplinary team are key to encourage these healthy behaviours.

Teenage pregnancy rates continue to decline in England, and are now at their lowest level since 1969 (Office for National Statistics, 2017). Whilst this is heralded as a success, under-18 conception rates in England are still the highest compared to similar Western European countries (Whitworth et al., 2017). Importantly, teenage pregnancy rates are high in areas of deprivation (Public Health England, 2016), clustering with other public health issues such as obesity. For example, areas of high childhood obesity also have high rates of teenage parenthood (see table 1, London being the anomaly where childhood obesity is high and teenage parenthood low). This article outlines the risks associated with obesity in pregnant teenagers and how to support these young women with weight management during pregnancy.

#### *Risks associated with maternal obesity and gestational weight gain*

In 2016, 22,645 babies were born to mothers under the age of 20 in England and Wales (Office for National Statistics, 2017). Similar to adult pregnant women maternal obesity is common in pregnant teenagers. A UK study of 2,000 teenagers found about 20% of pregnant teenagers between 14-18 years to be overweight and 10% categorised as obese (Baker et al., 2009) in early pregnancy (based on age-adjusted classifications for teenage Body Mass Index). Whilst it has been suggested that maternal obesity may protect against preterm delivery in these young women (Baker and Haeri, 2014), it is also associated with risks such as preeclampsia, caesarean delivery, and having a baby who is small for gestational age (Kansu-Celik et al., 2017).

In addition to the risks associated with maternal obesity, focus also needs to be on the weight gained during pregnancy. A recent review found that young women may gain between 14 and 17 kilos (Marvin-Dowle et al., 2016) during pregnancy, which is more than recommended by international guidelines (Institute of Medicine, 2009). Little research is available on

teenagers' views regarding their weight gain in pregnancy. In one small American qualitative study with pregnant teenagers, none of the participants reported concerns about excessive weight gain (Wise, 2015). This is similar to UK research findings with adult women (see Olander et al., 2011) and is likely due to the limited information pregnant teenagers receive on gestational weight gain. A recent UK study found that less than one in five young women report receiving information on gestational weight gain (Soltani et al., 2017). This is in stark contrast to information about 'foods to avoid', which three in four women reported receiving. To support pregnant teenagers to gain a healthy weight in pregnancy, focus needs to be on weight-related behaviours and how to support healthy eating, physical activity and reducing sedentary behaviour (i.e. sitting).

### **Healthy eating**

Pregnant teenagers have specific dietary requirements to support both their own continued growth and development as well as that of their baby (Soltani et al., 2017). Some have argued that there is a competition for nutrients between the mother and fetus (Moran, 2007). This is concerning as studies have also found that pregnant teenagers diet is often poor and have a nutrient intake (for example energy, iron, folate, calcium and magnesium) that is below recommended values (Moran, 2007).

The research literature is mixed regarding whether pregnant teenagers change their dietary behaviour when they become pregnant or not. A UK study found that young women reported making positive changes to their diet, but that some of these changes involved avoiding food groups unnecessarily (Soltani et al., 2017). Other research from America has suggested that very few pregnant teenagers make changes to their diet when becoming pregnant (Whisner et al., 2016). These findings mirror recent review findings with adult pregnant women that

identified inconsistent changes in diet during pregnancy (Hillier and Olander, 2017). Such mixed findings have implications for service development and intervention, as it is uncertain what dietary changes teenagers may make spontaneously and what changes they may need help with.

Pregnant teenagers report a number of barriers to eating healthily, including a lack of money, access to food, and personal relationships not supporting a healthy diet (Whisner et al., 2016). These teenagers, aged 14 to 18 years old, also reported relying on others to buy or cook their food meaning what they eat may be outside their control (Whisner et al., 2016). A study by Wise, (2015) found that misconceptions regarding diet during pregnancy also exist, for example that taking vitamins may justify eating unhealthy food. Further, the value of prenatal vitamins was found to be overestimated by these pregnant 16 to 19 year olds who felt that vitamin supplements replaced the vitamins and minerals found naturally in healthy foods. Such misapprehensions suggest that women need education regarding maternal diet and foetal development during pregnancy (Wise, 2015).

### **Physical activity and sedentary behaviour**

Whilst healthy eating has been studied to some degree in the pregnant teenage population, less research has been done concerning physical activity and sedentary behaviour. A small American survey suggests that pregnant teenagers would be more physically active if they had someone to exercise with or were members of a gym (Wise and Arcamone, 2011).

Keeping physically active during pregnancy is associated with improved mental wellbeing (Haakstad et al., 2016). Given the high rates of mental health problems in pregnant teenagers, emphasising that physical activity might improve subjective sense of wellbeing may be important (Dinwiddie et al., 2018). The current NICE guidelines apply to teenagers and

recommend at least 30 minutes per day of moderate intensity activity, characterised as activity that leads to faster breathing, increased heart rate and feeling warmer, for example walking at 3–4 mph (National Institute for Health and Care Excellence, 2010). If teenagers find this target difficult, they should be supported to start small and then work up to this physical activity level. In addition, teenagers should be supported to reduce sedentary activities, which includes sitting for long periods of time (National Institute for Health and Care Excellence, 2010).

### **Supporting teenagers to eat healthily and keep active during pregnancy**

The importance of healthy eating has been acknowledged by young pregnant women (Whisner et al., 2016) and acting as a positive role model for their child may be a motivating influence for these women to eat healthily (Wise, 2015). This suggests an opportunity for behaviour change, although given the complexity of weight and food related behaviours, solely having the motivation to change is rarely enough to succeed (Olander et al., 2016). Rather, some behaviour change theory suggests that physical and psychological capability (i.e. having the willpower to act) and having the physical and social opportunity (i.e. a physical and social environment that allows and encourages action) is needed to change behaviour (Michie et al., 2011). In other words, to facilitate healthy eating pregnant teenagers need to have the money to purchase healthy ingredients, understand the recipes and have the skills and appliances to cook the food as well as the social support to do this. Social support in particular seems to be an important factor influencing pregnant women's decisions regarding healthy eating and physical activity (Atkinson et al., 2016b).

We have found few interventions that have been developed to target pregnant teenagers' weight-management behaviours (ie healthy eating and physical activity) which is in contrast

to the many interventions developed for adult women (Thangaratinam et al., 2012). Importantly, young women may have different facilitators and barriers to engage in healthy weight-related behaviours during pregnancy (Chang et al., 2017), thus the assumption should not be that what works for adult women will necessarily work for teenagers. For example, factors such as a teenager's home environment and education will impact on her eating habits (Moran, 2007) and levels of physical activity and sedentary behaviour. Furthermore, pregnant teenagers have been found to be more likely to access maternity care late (Barber et al., 2017) which needs to be considered when developing interventions or service pathways so that these can be adapted or tailored towards women joining at different time points. Below are some more suggestions, based on the academic literature, on what to consider when supporting pregnant teenagers with weight-related behaviours in pregnancy.

#### *Service content*

Based on interviews and surveys with pregnant teenagers, research suggests that these women want practical support on how to make healthier choices from menus at fast food restaurants (Wise, 2015). This could include suggestions such as choosing a burger without a bun, opting for a small portions of chips, or sandwiches on brown or wholemeal bread without mayonnaise (First Steps Nutrition Trust, 2013). Young women also want recipe books outlining healthy meals and snacks (Soltani et al., 2017). For service development it is also helpful to identify what is of less interest to women; research has suggested this includes learning about what food sources provide what nutrients (Wise, 2015) or providing a phone helpline (Soltani et al., 2017).

In terms of physical activity, research from the adult pregnant population suggests women want to know what activities are safe and appropriate in pregnancy (Leiferman et al., 2011) and to receive help regarding tailored advice and goal setting (Atkinson et al., 2016a). It is

likely pregnant teenagers will benefit from this type of support as well, in addition to the physical opportunity and social support mentioned earlier.

### *Service delivery*

Research suggests that healthcare professionals, such as midwives and – later in the pathway – health visitors, may be appropriate deliverers of support around healthy eating and physical activity. Healthcare professionals such as midwives and family nurses are consistently reported to be an important source of information for this population of women (Soltani et al., 2017). Other sources of information include older relatives such as sisters, mothers and grandmothers (Whisner et al., 2016, Wise, 2015). Whilst not delivering support around healthy eating and physical activity directly, others who should be aware of services and able to refer, include social workers and teachers who women are in contact with (Macleod and Weaver, 2003). Indeed, there are also suggestions that interventions should be multidisciplinary to adequately support the complex psychosocial needs of these young women (Nielsen et al., 2006). This includes dieticians, exercise professionals and weight management specialists.

In delivering information and support, professionals also need to be sensitive to the way in which pregnant teenagers report feeling that their bodies are scrutinised by others, and how this public monitoring can be upsetting and distressing (Neiterman and Fox, 2017). The physical changes that both puberty and pregnancy bring may affect body image, which is a vital part of self-concept and self-esteem during adolescence (Kostanski and Gullone, 1998) and needs to be considered in services targeting weight.

There are a number of suggestions from the academic literature on how to engage teenage parents in nutrition education programs. A study by Wise (2015) reported suggestions from

young women including: offering incentives such as baby-related items, wanting to know the topics before they attend any sessions, appreciating information being delivered by their peers or via online/video format, and wanting practical cooking advice. Young women were less interested in shopping tours where healthy eating is discussed, as they were rarely the primary shopper (Wise, 2015). Appropriate online resources have also been identified as promising mechanisms to deliver information (Soltani et al., 2017). Importantly, service must consider the pregnant teenager's ability to follow advice offered bearing in mind her social circumstances and broader determinants to health (Burchett and Seeley, 2003).

## **Conclusion**

In summary, maintaining a healthy weight and good nutrition during pregnancy is a concern in the teenage population. The support pregnant teenagers want is in the main what adult women want during pregnancy, but there are factors that must be taken into consideration such as teenagers still growing and their bodies changing, as well as not necessarily being in charge of shopping for food or cooking their own meals. Delivery and content of support therefore needs to be different from adult women's weight related services in pregnancy and focus on the overall wellbeing of the teenage woman. Given the reduction in teenage pregnancy rates and the further emphasis on reducing teenage pregnancy, it is imperative that a structure of multi-disciplinary support remains in place for these mothers, whose own health outcomes are crucial in improving those of their children.

Area	Maternity rate per 1,000 women under 18 years (2015)	Percentage of Year 6 students (10-11 years old) categorised as overweight or obese (2015/16)
England	10.1	34.2% (34.1-34.4)
North East	16.7	37.3% (36.7-37.9)
North West	11.8	35.2% (34.9-35.6)
Yorkshire and the Humber	13.7	34.6% (34.2-35)
East Midlands	11.4	33.5% (33.1-33.9)
West Midlands	11.6	37.1% (36.7-37.5)
East of England	9.4	31.1% (31.1-31.9)
London	7	38.6% (38.2-38.9)
South East	7.9	30.6% (30.2-30.9)
South West	7.7	30.1% (29.7-30.5)

Table 1. Maternity rates (Office for National Statistics, 2017) and percentage of 10-11 year old children who are categorised as overweight or obese (NHS Digital, 2017).

## References

- ATKINSON, L., OLANDER, E. K. & FRENCH, D. P. 2016a. Acceptability of a Weight Management Intervention for Pregnant and Postpartum Women with BMI  $\geq 30$  kg/m<sup>2</sup>: A Qualitative Evaluation of an Individualized, Home-Based Service. *Maternal and Child Health Journal*, 20, 88-96.
- ATKINSON, L., SHAW, R. L. & FRENCH, D. P. 2016b. Is pregnancy a teachable moment for diet and physical activity behaviour change? An interpretative phenomenological analysis of the experiences of women during their first pregnancy. *British Journal of Health Psychology*, n/a-n/a.
- BAKER, A. M. & HAERI, S. 2014. Estimating risk factors for spontaneous preterm delivery in teen pregnancies. *Archives of gynecology and obstetrics*, 289, 1203-1206.
- BAKER, P. N., WHEELER, S. J., SANDERS, T. A., THOMAS, J. E., HUTCHINSON, C. J., CLARKE, K., BERRY, J. L., JONES, R. L., SEED, P. T. & POSTON, L. 2009. A prospective study of micronutrient status in adolescent pregnancy. *The American Journal of Clinical Nutrition*, 89, 1114-1124.
- BARBER, C., RANKIN, J. & HESLEHURST, N. 2017. Maternal body mass index and access to antenatal care: a retrospective analysis of 619,502 births in England. *BMC Pregnancy and Childbirth*, 17, 290.
- BURCHETT, H. & SEELEY, A. 2003. Short Report: Good Enough to Eat? The Diet of Pregnant Teenagers. *International Journal of Health Promotion and Education*, 41, 59-61.
- CHANG, T., MONIZ, M. H., PLEGUE, M. A., SEN, A., DAVIS, M. M., VILLAMOR, E. & RICHARDSON, C. R. 2017. Characteristics of women age 15-24 at risk for excess weight gain during pregnancy. *PloS one*, 12, e0173790.
- DINWIDDIE, K. J., SCHILLERSTROM, T. L. & SCHILLERSTROM, J. E. 2018. Postpartum depression in adolescent mothers. *Journal of Psychosomatic Obstetrics & Gynecology*, 39, 168-175.
- FIRST STEPS NUTRITION TRUST 2013. Eating well in pregnancy: A practical guide to support teenagers. .
- HAAKSTAD, L. A. H., TORSET, B. & BØ, K. 2016. What is the effect of regular group exercise on maternal psychological outcomes and common pregnancy complaints? An assessor blinded RCT. *Midwifery*, 32, 81-86.
- HILLIER, S. E. & OLANDER, E. K. 2017. Women's dietary changes before and during pregnancy: A systematic review. *Midwifery*, 49, 19-31.
- INSTITUTE OF MEDICINE 2009. *Weight gain during pregnancy: reexamining the guidelines.*, Washington, DC, National Academy Press.
- KANSU-CELIK, H., KISA KARAKAYA, B., GUZEL, A. I., TASCI, Y. & ERKAYA, S. 2017. To evaluate the effect of pre-pregnancy body mass index on maternal and perinatal outcomes among adolescent pregnant women. *The Journal of Maternal-Fetal & Neonatal Medicine*, 30, 1574-1578.
- KOSTANSKI, M. & GULLONE, E. 1998. Adolescent Body Image Dissatisfaction: Relationships with Self-esteem, Anxiety, and Depression Controlling for Body Mass. *Journal of Child Psychology and Psychiatry*, 39, 255-262.
- LEIFERMAN, J., SWIBAS, T., KOINESS, K., MARSHALL, J. A. & DUNN, A. L. 2011. My Baby, My Move: Examination of Perceived Barriers and Motivating Factors Related to Antenatal Physical Activity. *Journal of Midwifery and Women's Health*, 56, 33-40.
- MACLEOD, A. & WEAVER, S. 2003. Teenage pregnancy: attitudes, social support and adjustment to pregnancy during the antenatal period. *Journal of reproductive and infant psychology*, 21, 49-59.

- MARVIN-DOWLE, K., BURLEY, V. J. & SOLTANI, H. 2016. Nutrient intakes and nutritional biomarkers in pregnant adolescents: a systematic review of studies in developed countries. *BMC Pregnancy and Childbirth*, 16, 268.
- MICHIE, S., VAN STRALEN, M. M. & WEST, R. 2011. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science*, 6, 42.
- MORAN, V. H. 2007. A systematic review of dietary assessments of pregnant adolescents in industrialised countries. *British Journal of Nutrition*, 97, 411-425.
- NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE 2010. NICE public health guidance 27: Weight management before, during and after pregnancy. London.
- NEITERMAN, E. & FOX, B. 2017. Controlling the unruly maternal body: Losing and gaining control over the body during pregnancy and the postpartum period. *Social Science & Medicine*, 174, 142-148.
- NHS DIGITAL 2017. National Child Measurement Programme - England, 2016-17.
- NIELSEN, J. N., GITTELSON, J., ANLIKER, J. & O'BRIEN, K. 2006. Interventions to improve diet and weight gain among pregnant adolescents and recommendations for future research. *Journal of the American Dietetic Association*, 106, 1825-1840.
- OFFICE FOR NATIONAL STATISTICS 2017. Conception Statistics. England and Wales, 2015.
- OLANDER, E. K., ATKINSON, L., EDMUNDS, J. K. & FRENCH, D. P. 2011. The views of pre- and post-natal women and health professionals regarding gestational weight gain: An exploratory study. *Sexual & Reproductive Healthcare*, 2, 43-8.
- OLANDER, E. K., DARWIN, Z. J., ATKINSON, L., SMITH, D. M. & GARDNER, B. 2016. Beyond the 'teachable moment' – A conceptual analysis of women's perinatal behaviour change. *Women and Birth*, 29, e67-e71.
- PUBLIC HEALTH ENGLAND 2016. A framework for supporting teenage mothers and young fathers
- SOLTANI, H., DUXBURY, A., RUNDLE, R. & MARVIN-DOWLE, K. 2017. Dietary habits and supplementation practices of young women during pregnancy: an online cross-sectional survey of young mothers and health care professionals. *BMC Nutrition*, 3, 19.
- THANGARATINAM, S., ROGOZIŃSKA, E., JOLLY, K., GLINKOWSKI, S., ROSEBOOM, T., TOMLINSON, J., KUNZ, R., MOL, B., COOMARASAMY, A. & KHAN, K. 2012. Effects of interventions in pregnancy on maternal weight and obstetric outcomes: meta-analysis of randomised evidence. *BMJ*, 344, e2088.
- WHISNER, C. M., BRUENING, M. & O'BRIEN, K. O. 2016. A Brief Survey of Dietary Beliefs and Behaviors of Pregnant Adolescents. *Journal of Pediatric and Adolescent Gynecology*, 29, 476-481.
- WHITWORTH, M., COCKERILL, R. & LAMB, H. 2017. Antenatal management of teenage pregnancy. *Obstetrics, Gynaecology & Reproductive Medicine*, 27, 50-56.
- WISE, N. J. 2015. Pregnant Adolescents, Beliefs About Healthy Eating, Factors that Influence Food Choices, and Nutrition Education Preferences. *Journal of Midwifery & Women's Health*, 60, 410-418.
- WISE, N. J. & ARCAMONE, A. A. 2011. Survey of Adolescent Views of Healthy Eating During Pregnancy. 36, 381-386.