Smoking in Pregnancy

Introduction

Smoking continues to be a significant public health issue. Smoking in pregnancy is of concern due to the potential impacts on both the mother and the baby. Therefore, women need advice and support in order to stop.

This briefing paper both summarisies publically available data from Public Health England [1] as well as an analysis of smoking habits, characterists, and birth outcomes of 5526 maternity records from the Norfolk and Norwich University Hospital (NNUH) between the period of July 2017 - June 2018.

Summary

Smoking in pregnancy increases the risk of stillbirth, miscarriage, low birth weight, and poor growth and development of the baby, which can lead to ill-health during childhood and adulthood[2], as well as increasing the risk of complications during pregnancy and labour. Women who smoke at the time of pregnancy are therefore encouraged to stop. Women can also gain long-term health benefits from stopping smoking both for themselves, and for the child in terms of reduced exposure to secondhand smoke.[3] There is a decreasing trend of women smoking at the time of delivery in line with the rest of England, however rates in Norfolk remain above the national average.

The percentage of women smoking at the time of delivery (SATOD) from the NNUH in 2017/18 was similar to the proportion observed in Clinical Commissioning Group (CCG) level reported data. Most smokers were classed as light smokers at time of antenatal booking appointment – admitting to less than 10 cigarettes per day. The analysis showed that most pregnant smokers wanted to quit early in their pregnancies. However, only a small proportion went on to accept referral to a specialist smoking cessation service and few achieved cessations regardless of whether they were referred or not. One strong prognostic indicator of cessation failure is living with a fellow smoker.

Pregnant smokers in the NNUH study were more likely to have had previous miscarriages, more likely to have more children and more likely to have premature babies. Babies born to smokers generally had lower birthweight, with the heaviest smokers having the smallest babies and smaller still if they lived with a fellow smoker. Babies born to smoking mothers were also more likely to need transfer to intensive care and less likely to breastfeed within the first 48 hours of delivery. The study stillbirth rate is higher than the national average, with proportionally more stillbirths born to smoking mothers in Norfolk .

Headlines

In 2018 there were approximately 8436 live births in Norfolk[4]. Of those giving birth 13.38% in 2018/19 were documented to be smokers at the time of delivering their baby (Figure 1). Although, the trend for this value is decreasing and getting better, it is still significantly worse than the English average of 10.59%. This rate places Norfolk as the region in the East of England with the highest rate of smoking at time of delivery.

[1] https://fingertips.phe.org.uk/
[2] Public Health England (2018) Health Matters: stopping smoking - what works? https://www.gov.uk/government/publications/health-matters-stopping-smoking-what-works/health-matters-stopping-smoking-what-works
[3] Public Health England. Public Health Outcomes Framework, Smoking status at time of delivery. http://www.phoutcomes.info/public-health-outcomes-framework#page/6/gid/1000042/pat/6/par/E12000006/ati/102/are/E10000020/iid/20301/age/1/sex/2
[4] Office for National Statistics (2018) Birth summary tables, England and Wales https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/datasets/birthsummarytables

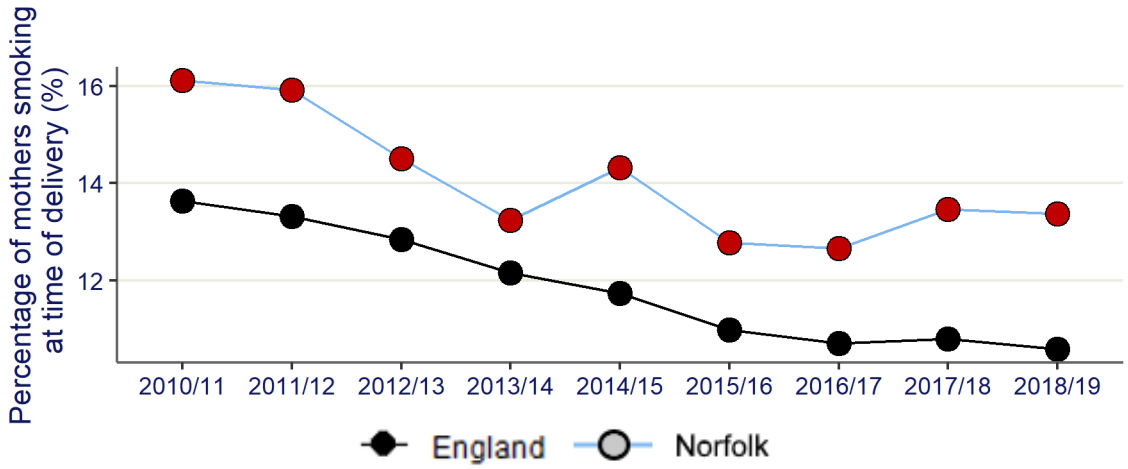

Figure 1: Smoking status at time of delivery.[5] *KEY: Markers are coloured red where they are statistically significantly higher than average, yellow where there is no significant difference and green where they are significantly lower than average*

By CCG region within Norfolk (Figure 2) the 2018/19 figures for smoking in pregnancy showed that prevalence is highest in Great Yarmouth and Waveney CCG and West Norfolk CCG.[6]

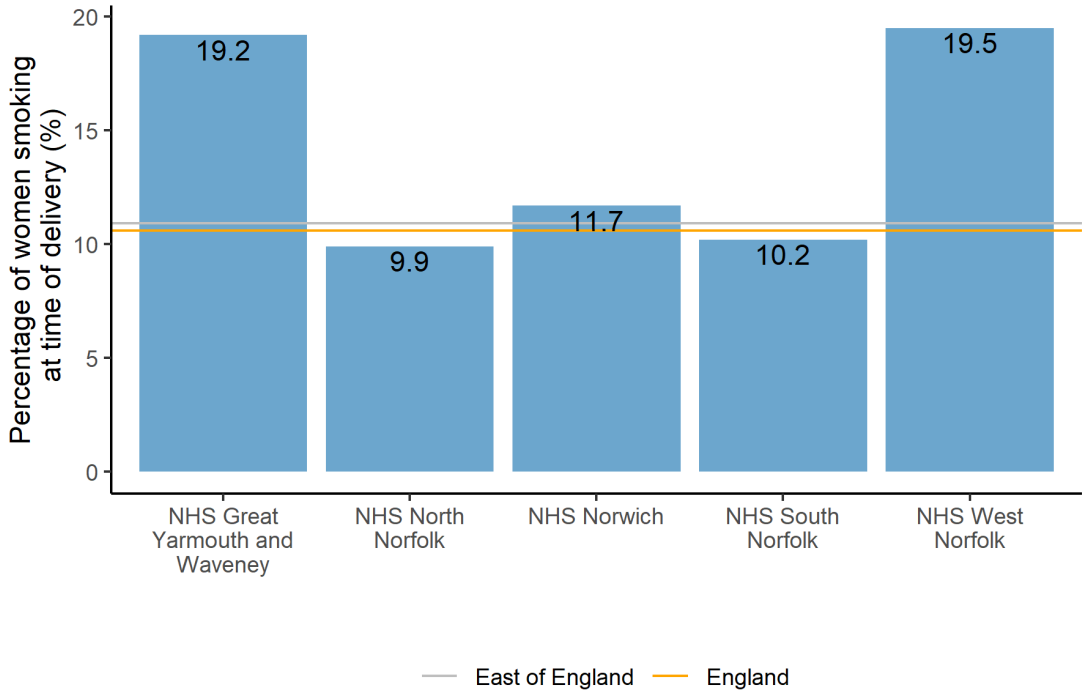

Figure 2: percentage of women who were smokers at time of delivery in Norfolk 2018/19 according to Clinical Commissioning Group. Data from NHS Digital (2019) Statistics on Women's Smoking Status at Time of Delivery, England- Annual, 2018-19: Report.

Within the NNUH study, 11.2% of the women were 'Current Smokers' (Figure 3) this is slightly lower than the prevalence for Norwich CCG in 2018-2019 but slightly higher than the national figure of 10.6% (Figure 2).

[5] Public Health Outcomes Framework. http://www.phoutcomes.info/public-health-outcomes-framework#page/3/gid/1000042/pat/6/par/E12000006/ati/102/are/E10000020/iid/20301/age/1/sex/2

[6] NHS Digital (2019) Statistics on Women's Smoking Status at Time of Delivery, England- Annual, 2018-19: Report. https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-women-s-smoking-status-at-time-of-delivery-england/statistics-on-womens-smoking-status-at-time-of-delivery-england-quarter-4-january-2019-to-march-2019

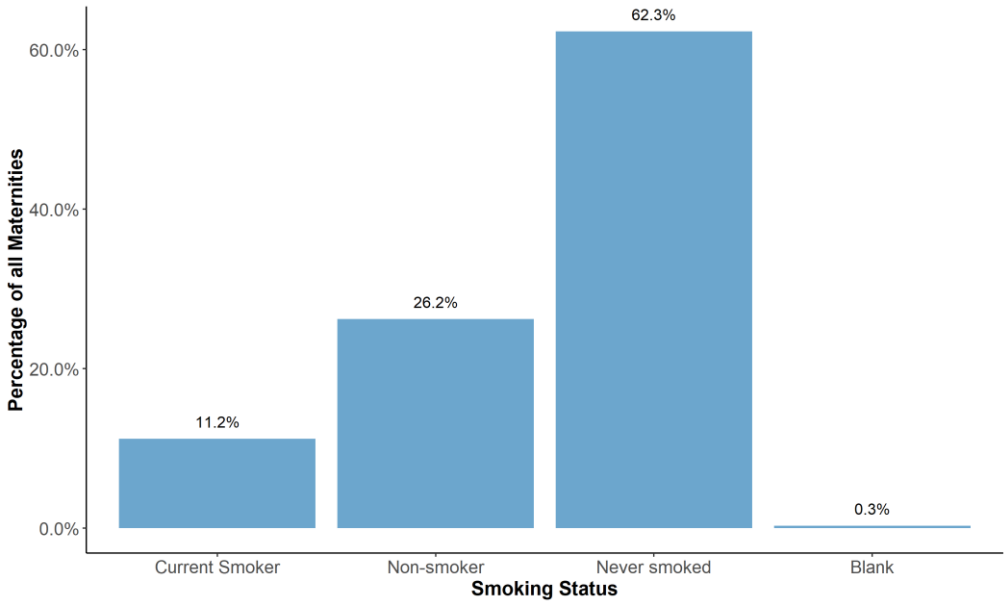

Figure 3: Smoking status at time of delivery. NNUH analysis.

Influences on Health and Wellbeing

Smoking during pregnancy can have an impact on both the mother and the developing baby. Maternal concerns include long term health impacts of continuing smoking, such as cardiovascular disease and lung disease, as well as complications during labour and postpartum. Smoking causes an increased risk of miscarriage, premature birth, stillbirth and low birth weight as well as increased risk of sudden infant death. Long term complications for the baby of smoking during pregnancy include greater risk of asthma, attention deficit hyperactivity disorder (ADHD), and congenital heart disease.

These statistics were reflected in the NNUH analysis where smokers had a statistically significantly higher rate of miscarriages 30.9% than non-smokers 22.8%; The study stillbirth rate in smokers was higher (4.5 per 1000) than the national rate (4.1 per 1000)[7]; Exposure to smoke (as smokers or second-hand smokers) had a stillbirth rate of 9.1 per 1000; and a higher rate of prematurity was observed for babies of the whole study cohort (90.2 per 1000) than the overall Norfolk rate 83.6 per 1000[8].

Futhermore, according to the NNUH analysis, women who smoke during preganancy are less likely to breastfeed. Increases in breasftfeeding is linked to a reduction of illness in both the infant and the mother[9]. The reasons for this are likely to be multifactorial with biological, social and behavioural theories reflected in the literature. There is some evidence that moderate smoking is associated with decreased milk production and altered composition[10].

There were 194 full-term babies born with a low birth weight in Norfolk in 2017; this gives Norfolk a low birth weight rate of 2.45%, which is significantly better than the national average of 2.82%[11].

Infant mortality is similar to the average for England, at 3.21 per 1000 compared to 3.92 per 1000 in 2015 - 17[12].

---

[7] Office of National Statistics. Births in England & Wales:2017. Live births, stillbirths and the intensity of childbearing, measured by the total fertility rate (2018).
[8] PHE Fingertips Pregnancy & Birth profiles (2015-2017).
[9] https://fingertips.phe.org.uk/search/breastfeeding#page/6/gid/1/pat/6/par/E12000006/ati/102/are/E10000020/iid/20201/age/1/sex/2
[10] Mennella et al Breastfeeding and Smoking: Short-term Effects on Infant Feeding and Sleep Paediatics 2007 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2277470/
[11] PHE Fingertips (2017) https://fingertips.phe.org.uk/search/low%20birth%20weight#page/6/gid/1/pat/6/par/E12000006/ati/102/are/E10000020/iid/20101/age/235/sex/4
[12] PHE Fingertips (2015-2017) https://fingertips.phe.org.uk/search/infant%20mortality#page/6/gid/1/pat/6/par/E12000006/ati/102/are/E10000020/iid/92196/age/2/sex/4

Social, environmental, population context

Prevalence of smoking in pregnancy is higher in women who have never worked or are routine and manual workers. More deprived communities are also more likely to smoke.

Within Norfolk the highest rates of smoking in pregnancy are in West Norfolk CCG and Great Yarmouth and Waveney CCG. North Norfolk CCG has the lowest rate, where prevalence is below the average for England.

Smoking is also a factor shown to exacerbate inequalities in life expectancy and causes of death in Norfolk[13]. Reducing levels of smoking in pregnancy may contribute to breaking the cycle of health inequalities as this is a key life point for multiple contacts with a healthcare professional to provide education and support.

In the NNUH analysis, smoking at delivery was associated with higher deprivation (Figure 4).

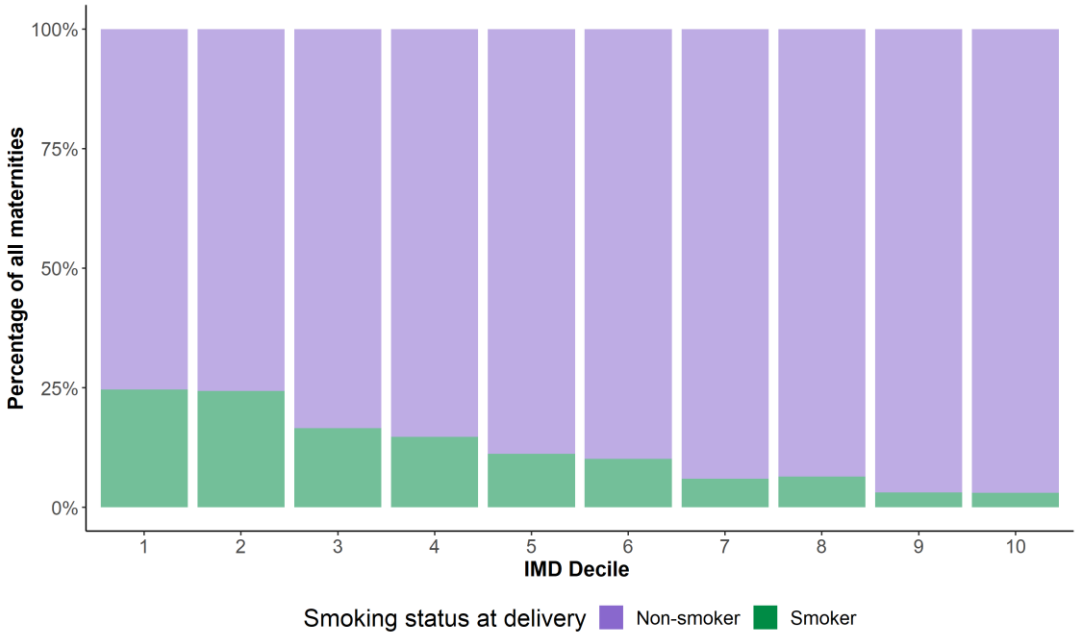

Figure 4: Percentage of those who smoke at delivery by deprivation decile, where 1 = most deprived, 10 = least deprived. NNUH analysis.

Burden of ill health and gaps in services

Smoking in pregnancy can lead to complications for both the mother and the developing baby including increasing risk of stillbirth, low birth weight and congenital heart disease. Ongoing ill-health for the infant such as asthma, and for the mother, such as cardiovascular disease and chronic obstructive pulmonary disease (COPD) are also potential consequences of tobacco use during pregnancy.

In England smoking costs society an estimated £13.8 billion per year when direct healthcare and social care costs for smoking-related disease, lost productivity and smoking-related fires are included. This figure includes £242 million spent on illnesses of non-smokers exposed to secondhand smoke[14]. Using pregnancy as a critical point of contact to initiate intervention in terms of encouraging women to cut down or stop smoking could reduce these costs going forward. It will also reduce personal and close contact morbidity from smoke exposure.

Current services, local plans and strategies

All pregnant women who are eligible for NHS care can receive free antenatal care including referral to smoking cessation services where necessary[15]. Smoking cessation services can also be accessed by women directly, outside of their maternity care, via local Smokefree services which are free of charge.

---

[13] Norfolk Tobacco Control Alliance (2016) Tobacco Control Strategy 2016-2020
[14] Action on Smoking (2015) Smoking Still Kills: Protecting Children, Reducing Inequalities. http://ash.org.uk/information-and-resources/reports-submissions/reports/smoking-still-kills/
[15] Maternity Action. Entitlement to free NHS maternity care for women from abroad (in England) https://www.maternityaction.org.uk/advice-2/mums-dads-scenarios/3-women-from-abroad/entitlement-to-free-nhs-maternity-care-for-women-from-abroad/

Measures to address smoking in pregnancy have been outlined in the government's Tobacco Control Plan for England 2017 [16] and is a priority of the Saving Babies' Lives care bundle[17]. There is a national ambition to reduce smoking at time of delivery (SATOD) to 6% by 2022 This is a particularly ambitious target for the Norfolk & Waveney STP[18] which has an overall SATOD rate of 14% for 2018/19[19].

Carbon monoxide (CO) is one of the chemicals taken into the body when smoking. In addition to taking a smoking status history from women, routine CO monitoring is offered to pregnant women at antenatal clinic appointments. Shown to facilitate referral to smoking cessation services, this has therefore been recommended in guidance from the National Institute of Health and Care Excellence (NICE)[20], as well as a national strategy set out in the 2016 Saving Babies' Lives care bundle[19].

Other measures in place include use of an opt-out system for referral following CO testing, greater awareness and training for midwives and other healthcare professionals, and encouraging greater shared accountability by partners. A family approach is also being used, targeting messages to other young women as well as mothers. These measures all accompany national legislation including regulation of cigarette packaging design and packet size, age of sale, and ban on indoor smoking in public places.

Voice - the perspective from the public, service users, referrers and front line staff

A survey in 2011 of midwives at eight Trusts in the North East of England indicated that midwives feel that engaging in conversations about smoking are part of their professional role, however it can be difficult for some midwives to have frank conversations about smoking with the women in their care. In May 2016 Public Health England and the National Centre for Smoking Cessation and Training (NCSCT) published guidance for discussing smoking with pregnant women[21]. This highlights how some women feel that there is stigma associated with smoking during pregnancy and may therefore be reluctant to disclose their exposure.

The importance of maintaining continuity of support throughout pregnancy and postpartum is noted to aid success in stopping. Support to stop smoking extended beyond healthcare professionals by encouraging partners and family to quit can have a great impact on chances of success.

Some women use pregnancy as the trigger to start their cessation efforts, while others need greater support to encourage this change and appreciated the support of NHS smoking cessation services. Common concerns about stopping smoking in pregnancy include fear of weight gain, feeling unable to stop completely, and worries about how to avoid giving in to cravings[22].

Considerations for Health and Wellbeing Board and commissioners

Smoking related disease and premature deaths are largely preventable. At the critical contact point of pregnancy it is important to encourage healthy lifestyle changes to benefit women and their unborn babies. The Norfolk Tobacco Control Strategy describes a need to develop clearer guidance on the use of vapes in smoking cessation during pregnancy as it emerges within general smoking cessation services, which may be an important addition to smoking cessation services than remains to be fully explored.

Consideration is given to continuing to target primary prevention strategies towards young women with the aim to minimise those starting to smoke in the first instance, prior to pregnancy, as well as encouraging those planning a pregnancy to stop.

The current results of the NNUH analysis show that pregnant smokers are more likely to live with a fellow smoker and if this is the case they are less likely to have quit by the time of delivery. This indicates a need to engage pregnant women's partners and families in the process of smoking cessation in order to change attitudes towards smoking. This will in turn help to reduce secondhand smoke exposure to the baby after

---

[16] Towards a smoke-free generation: a tobacco control plan for England. Department of Health and Social Care 2017
[17] Saving Babies' Lives: A care bundle for reducing stillbirth. NHS England 2016
[18] STP – Sustainability and Transformation Partnership
[19] NHS England (2016) Saving Babies' Lives, A Care Bundle For Reducing Stillbirth. https://www.england.nhs.uk/wp-content/uploads/2016/03/saving-babies-lives-car-bundl.pdf
[20] National Institute of Health and Care Excellence (2010). Smoking: stopping in pregnancy and after childbirth [PH26]. https://www.nice.org.uk/guidance/ph26/chapter/2-Public-health-need-and-practice
[21] Public Health England & the National Centre for Smoking Cessation and Training (2016) Smoking Cessation: A Briefing for Midwifery Staff http://www.ncsct.co.uk/publication_briefing_for_midwifery_staff.php
[22] Baby Centre (2017) Mum's Tips on Quitting https://www.babycentre.co.uk/a550972/mums-tips-how-to-quit-smoking

delivery in addition, with a likely reduction in long-term smoking related health problems for the whole family. More benefit is gained when women are encouraged to stop completely where possible rather than simply cut down.

Accurately identifying women who smoke or are exposed to smoke during pregnancy should be a focus during antenatal care. Carbon monoxide (CO) monitoring routinely offered to all women regardless of their self-reported smoking status can aid in the identification of women who are exposed but feel embarrassment or social stigma which prevents them from reporting this accurately, and therefore ensure that these women are appropriately referred to smoking cessation services.

Although rates of stopping are improving it has been noted in evidence examined by NICE that relapse rates are high in the 6 months following delivery. This is a period of time in which women continue to have contact with a variety of healthcare professionals gives opportunities to offer further support and advice via ongoing smoking cessation services, again aiming for health benefits for both the mother and the infant long-term.

References and information

Public Health England, Public Health Outcomes Indicator 2.03 “Smoking Status at Time of Delivery”
http://www.phoutcomes.info/public-health-outcomes-framework#page/4/gid/1000042/pat/6/par/E12000006/ati/102/are/E10000020/iid/20301/age/1/sex/2

Norfolk Tobacco Control Alliance (2016) Tobacco Control Strategy 2016-2020. National Institute of Health and Care Excellence (2010). Smoking: stopping in pregnancy and after childbirth [PH26].
https://www.nice.org.uk/guidance/ph26/chapter/2-Public-health-need-and-practice

Author and key contacts

Victoria Leigh, Reporting Analyst, Norfolk County Council
Victoria.leigh@norfolk.gov.uk

Michelle R. Drolet, Year 5 Medical Student, University of East Anglia
jsna@norfolk.gov.uk

Online feedback: Send us your query or feedback online using our online feedback form at
http://www.norfolkinsight.org.uk/feedback

Email: JSNA@norfolk.gov.uk

Publication date

8th January 2020