Effect of smoking among Indigenous and non-Indigenous mothers on preterm birth and full-term low birthweight

Barry N J Walters

To the Editor: Wills and Coory emphasise maternal smoking as a risk factor for preterm birth and low birthweight, with exaggerated effects apparent in Indigenous women.[1] They suggest that governments have a responsibility to ensure that interventions are offered to help women quit. Unfortunately, there are adverse effects of smoking cessation that mitigate the gains of cessation and introduce a caveat to that otherwise laudable motive.

It has been shown that young women who cease smoking almost always gain significant weight.[2] The fall in smoking rates in women over the past 20 years appears to have been in inverse proportion to the rise in rates of obesity in pregnancy, suggesting a possible relationship.

The adverse maternal and fetal effects of overweight and obesity in pregnancy have been confirmed in numerous studies,[3-5] and equal or exceed those of smoking. Typical odds ratios (ORs) from the literature[3-6] are shown below. Maternal overweight (body mass index [BMI], 25–30 kg/m^2) and obesity (BMI, > 30 kg/m^2) are associated with significant increases in pre-eclampsia (OR for overweight, 1.8; OR for obese, 3.0), gestational diabetes (1.8; 3.2), macrosomia (1.6; 2.4), shoulder dystocia (2.9 for obese), obstructed labour, caesarean delivery (1.5; 2.0), postpartum haemorrhage (1.2; 1.5), wound infection (1.3; 2.2), venous thromboembolism (1.3; 2.8) and maternal death. Further, overweight and obesity are also associated with increased rates of infertility, fetal abnormality (OR, 1.3–3.5), miscarriage (1.2–3.0), stillbirth (1.5; 2.0), admission to neonatal intensive care (1.2; 1.4) and neonatal death (1.6–2.7 for obese). In addition, the adverse effects of excessive weight gain during pregnancy are very similar to those detailed above.[7]

The long-term effects on the offspring of women who were obese in pregnancy (increased rates of obesity, diabetes and components of the metabolic syndrome) are well documented,[8] and at least equal in severity to the consequences for the children of smokers.

What then should we do? Should we condone smoking during pregnancy? No one would agree. Ideally, women should never start smoking, or they should give up without gaining weight, but these are elusive aims. At the very least, the conscientious practitioner must provide weight-control counselling, referral to a dietitian and an exercise program lest the gains of smoking cessation be overwhelmed by the losses accompanying excess maternal weight gain, overweight and obesity in pregnancy.

Barry N J Walters, Physician in Obstetric Medicine
King Edward Memorial Hospital for Women, Perth, WA.
barry.walters@health.wa.gov.au

1 Wills R-A, Coory MD. Effect of smoking among Indigenous and non-Indigenous mothers on preterm birth and full-term low birthweight. *Med J Aust* 2008; 189: 490-494.
2 Filozof C, Fernández Pinilla MC, Fernández-Cruz A. Smoking cessation and weight gain. *Obes Rev* 2004; 5: 95-103.
3 Yu CK, Teoh TG, Robinson S. Obesity in pregnancy. *BJOG* 2006; 113: 1117-1125.
4 Callaway LK, Prins JB, Chang AM, McIntyre HD. The prevalence and impact of overweight and obesity in an Australian obstetric population. *Med J Aust* 2006; 184: 56-59.
5 O'Brien TE, Ray JG, Chan W-S. Maternal body mass index and the risk of preeclampsia: a systematic overview. *Epidemiology* 2003; 14: 368-374.
6 Fitzsimons K, Modder J, Greer I. Obesity in pregnancy: risks and management. *Obstet Med* 2009. In press.
7 Wrotniak BH, Shults J, Butts S, Stettler N. Gestational weight gain and risk of overweight in the offspring at age 7y in a multicenter, multiethnic cohort study. *Am J Clin Nutr* 2008; 87: 1818-1824.
8 Catalano PM, Ehrenberg HM. The short- and long-term implications of maternal obesity on the mother and her offspring. *BJOG* 2006; 113: 1126-1133. ❑