

## Perinatal smoking in mothers and fathers: Longitudinal associations with infant birth outcomes.

Emmelyn Weller<sup>1</sup>, Stephanie Aarsman<sup>1,2</sup>, Samantha Teague<sup>1,3</sup>, Chris Greenwood<sup>1,2,4</sup>, George Youssef<sup>1,2,4</sup>, Richard Mattick<sup>5</sup>, Elizabeth Elliott<sup>6,7</sup>, Steve Allsop<sup>8</sup>, Lucy Burns<sup>5</sup>, Jake Najman<sup>9</sup>, Sue Jacobs<sup>10</sup>, Craig Olsson<sup>2,3,5</sup>, & Delyse Hutchinson<sup>1,2,3,5</sup>

<sup>1</sup> Centre of Social and Early Emotional Development, Deakin University, Geelong, Australia. <sup>2</sup> Centre for Adolescent Health, Murdoch Children's Research Institute, Royal Children's Hospital, Melbourne, Australia. <sup>3</sup> Department of Psychology, College of Healthcare Sciences, James Cook University, Townsville, Australia. <sup>4</sup> Department of Paediatrics, University of Melbourne, Royal Children's Hospital, Melbourne, Australia. <sup>5</sup> National Drug and Alcohol Research Centre, University New South Wales, Sydney, Australia. <sup>6</sup> Discipline of Child and Adolescent Health, University of Sydney, Sydney, Australia. <sup>7</sup> The Children's Hospital at Westmead, Sydney, Australia. <sup>8</sup> National Drug Research Institute, Curtin University, Perth, Australia. <sup>9</sup> Queensland Alcohol and Drug Research and Education Centre, University of Queensland. <sup>10</sup> Royal Prince Alfred Hospital, Sydney, Australia.

Presenter's email: [e.weller@deakin.edu.au](mailto:e.weller@deakin.edu.au)

**Introduction and Aims:** Smoking in pregnancy is an established risk for poor infant birth outcomes, yet knowledge on the impacts of smoking in the preconception and early weeks of pregnancy, often referred to as periconception, is limited [1-4]. Understanding the impacts of maternal smoking during these periods into pregnancy is critical to informing earlier approaches to prevention. Further, very few studies have examined the role of paternal smoking during the perinatal period on infant birth outcomes. This study therefore aimed to examine the association of maternal and paternal smoking at preconception, periconception and during pregnancy, with infant birth outcomes.

**Method:** Pregnant women and partners from the longitudinal Triple B Pregnancy Cohort Study (n=1,620 mothers; 820 fathers) were assessed across the perinatal period, with infants assessed at 8-weeks. Associations were examined between maternal and paternal smoking at preconception (3 months pre-pregnancy), periconception (around conception) and in pregnancy (trimesters 1-3) with hospital birth statistics at 8-weeks (birthweight, gestational age at birth, head circumference, size for gestational age, and neonatal intensive care unit (NICU) admission).

**Results:** Smoking was reported by 20% of mothers prior to pregnancy and remained stable (17%) until pregnancy awareness (10%). The frequency of paternal smoking was consistent across preconception and pregnancy (24%).

Preconception and periconception smoking in mothers were associated with higher odds of infant admission to NICU (OR = 1.70, 95%CI 1.17, 2.46; OR = 1.66, 95%CI = 1.12, 2.46, respectively). Likewise, smoking in pregnancy was associated with lower infant birthweight (B = -0.20 to -0.23), small size for gestational age (B = -0.16 to -0.36), and greater odds of admission to NICU (OR = 2.01 to 2.23). In the sub-sample of fathers assessed, there was little evidence of associations between smoking at preconception and pregnancy with infant birth outcomes.

**Discussion and Conclusions:** Findings underscore the importance of earlier smoking cessation support for parents prior to, and in the early weeks of pregnancy, to reduce the harmful impacts of smoking during pregnancy to both parents and infant offspring.

**Implications for Practice or Policy:** Results have important implications for approaches to family planning, with more targeted public health messaging about the harms associated with smoking in the perinatal period needed to reduce the risk of poor birth outcomes in infant offspring.

#### References

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