

# PERINATAL SMOKING IN MOTHERS AND FATHERS: LONGITUDINAL ASSOCIATIONS WITH INFANT BIRTH OUTCOMES.

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## PRESENTER

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## Background

Smoking in pregnancy is an established risk for poor infant birth outcomes.<sup>[1-4]</sup>

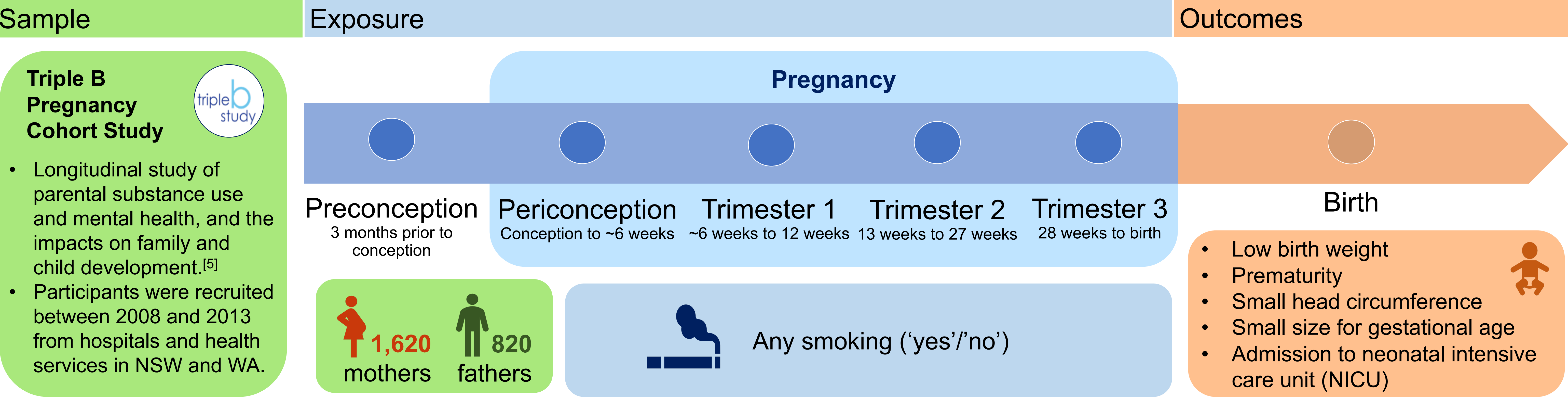
Knowledge on the maternal and paternal impacts of smoking in the preconception and early weeks of pregnancy, is limited.

Understanding the impacts of parental smoking is critical to informing earlier approaches to prevention.

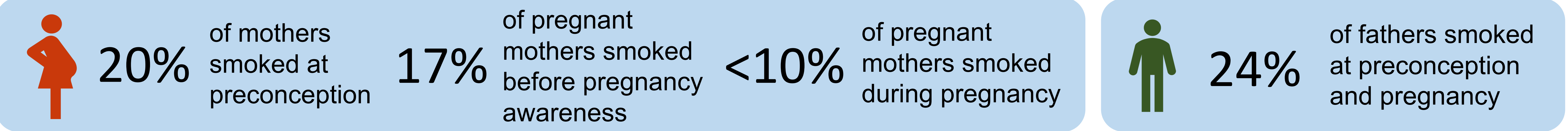
## Aims

Examine the association of maternal and paternal smoking at preconception, periconception and during pregnancy, with infant birth outcomes.

## Methods



## Results



Maternal smoking across the perinatal period was associated with higher odds of infant admission to NICU.

Pregnancy maternal smoking was associated with higher odds of low birth weight, prematurity, and small size for gestational age.

There was little evidence of associations between paternal smoking at preconception and pregnancy with infant birth outcomes.

	Mothers					Fathers <sup>a</sup>	
	Preconception	Periconception	Trimester 1	Trimester 2	Trimester 3	Preconception	Pregnancy
Low birth weight	1.5 (0.8, 2.8)	1.6 (0.8, 3.1)	<b>2.8 (1.3, 6.2)</b>	<b>2.4 (1.0, 5.8)</b>	<b>2.7 (1.2, 6.4)</b>	1.4 (0.5, 3.8)	0.8 (0.2, 2.6)
Prematurity	1.4 (0.8, 2.5)	1.7 (0.9, 2.9)	<b>3.2 (1.6, 6.4)</b>	<b>2.5 (1.2, 5.1)</b>	<b>2.7 (1.4, 5.5)</b>	0.8 (0.3, 2.0)	0.6 (0.2, 1.8)
Small size for gestational age	1.0 (0.5, 1.9)	1.0 (0.5, 2.0)	1.7 (0.8, 3.8)	<b>2.4 (1.1, 5.4)</b>	<b>2.7 (1.2, 6.2)</b>	1.4 (0.6, 3.1)	1.0 (0.4, 2.5)
Small head circumference	1.5 (0.8, 2.5)	1.3 (0.7, 2.3)	1.7 (0.8, 3.7)	1.6 (0.7, 3.7)	1.6 (0.7, 3.8)	1.1 (0.5, 2.5)	0.8 (0.3, 2.1)
Admission to NICU	<b>1.7 (1.2, 2.3)</b>	<b>1.6 (1.1, 2.4)</b>	<b>2.0 (1.2, 3.2)</b>	<b>2.1 (1.2, 3.5)</b>	<b>2.3 (1.4, 3.8)</b>	1.0 (0.6, 1.7)	1.1 (0.6, 1.8)

Note: Odds ratios | Bolded values indicate significance p <0.05 | Adjusted for age at birth, highest level of education, socioeconomic status (SES), number of children in care, country of birth and infant sex. (<sup>a</sup> Due to low cell size, socioeconomic status and number of children in care were omitted for associations with small head circumference and low birth weight, respectively, in paternal analyses only)

## Conclusions & Recommendations

In this cohort, parents continued to smoke during the perinatal period, even after pregnancy awareness.

Maternal smoking at preconception and, during all stages of pregnancy, was associated with low birth weight, prematurity and small size for gestational age.

Effects strengthened across the pregnancy period suggesting that continued use of tobacco was associated with poorer infant birth outcomes.

Given widespread knowledge of the effects of second-hand smoke on child development, it is likely that fathers chose to smoke away from their partners to reduce impacts on the developing foetus.

Targeted smoking cessation support for parents prior to, and in the early weeks of pregnancy, is required.

Future research in more diverse samples of fathers is needed to clarify the role of paternal smoking on offspring.

Infants perinatally exposed to tobacco should be routinely screened for indicators of poorer development.

1. World Health Organisation. WHO report on the global tobacco epidemic 2021: addressing new and emerging products. Geneva: World Health Organisation; 2021. | 2. Avsar TS, McLeod H, Jackson L. Health outcomes of smoking during pregnancy and the postpartum period: an umbrella review. BMC Pregnancy Childbirth. 2021;21(1):254. <https://doi.org/10.1186/s12884-021-03729-1> | 3. Di HK, Gan Y, Lu K, Wang C, Zhu Y, Meng X, et al. Maternal smoking status during pregnancy and low birth weight in offspring: systematic review and meta-analysis of 55 cohort studies published from 1986 to 2020. World J Pediatr. 2021;18(3):176–185. <https://doi.org/10.1007/s12519-021-00501-5> | 4. Pineles B, Hsu S, Park E, Samet J. Systematic review and meta-analyses of perinatal death and maternal exposure to tobacco smoke during pregnancy. Am. J. Epidemiol. 2016;183(2): 87-97. <https://doi.org/10.1093/aje/kwv301> | 5. Hutchinson, D., Wilson, J., Allsop, S., Elliott, E., Najman, J., Burns, L., Bartu, A., Jacobs, S., Honan, I., McCormack, C., Rossen, L., Fiedler, H., Stone, C., Khor, S., Ryan, J., J Youssef, G., A Olsson, C., P Mattick, R., & Triple B Research Consortium (2018). Cohort Profile: The Triple B Pregnancy Cohort Study: A longitudinal study of the relationship between alcohol, tobacco and other substance use during pregnancy and the health and well-being of Australian children and families. International journal of epidemiology, 47(1), 26–27m. <https://doi.org/10.1093/ije/dyx126>