

# 2022 Best Research Poster Award



## Maternal prenatal psychological distress and infant food allergy: findings from the Barwon Infant Study

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### INTRODUCTION

Australia has the highest prevalence reported for food allergy (FA) in the world, affecting up to 11% of children at age one. Extensive data also suggests an increase in the prevalence. However risk factors of FA remains unclear.

Maternal prenatal psychological distress may be a possible risk factor for FA given its link with other atopic diseases in children and adverse birth outcomes. This association has not been examined in studies with challenge-proved FA data.

### OBJECTIVES

To assess the effect of maternal psychological distress in pregnancy (stress, depression, and anxiety) on infant FA incidence in the Barwon Infant Study (BIS).

### METHOD

**Study sample** 593 mother-infant pairs from the BIS with information on prenatal stress and infant FA.

#### Measurements

Maternal psychological distress (measured at 28-week of gestation)

- Prenatal stress: assessed with the Perceived Stress Scale 14 items version (PSS-14 score); range: 0-56
  - Prenatal depression: assessed with the Edinburgh Postnatal Depression Scale (EPDS score); range: 0-30
  - Prenatal anxiety: measured with the EPDS anxiety subscale (EPDS items 3-5 sum score): range: 0-9
- Infant FA: measured by skin prick test at 12 months and confirmed by oral food challenge.

Covariates: demographic and household (family size, pet and livestock ownership, birth order); prenatal (BMI, smoking, psychosocial condition, air pollutant exposure), perinatal (birth mode and child sex), and postnatal (antibiotics and childcare use in first year)

#### Statistical analysis

Robust Poisson regression was used to estimate the risk ratio (RR) and 95% confidence interval (CI).

### RESULTS

- Forty-six of the 593 infants included in data analyses developed food allergies at one year (7.8%).
- Scores on maternal prenatal stress, depression, and anxiety scales were not associated with the incidence of food allergy in children at age one (RR, 95% CI: 1.02, 0.98-1.07; 1.04, 0.96-1.12; 1.02, 0.87-1.19, respectively).
- However, mothers with an extremely high level of stress or clinically significant depression during pregnancy were associated with a more than doubled risk of food allergy compared to those without (RR, 95% CI: 2.22, 0.52-9.48 and 3.06, 0.96-9.74, respectively).

### DISCUSSION

#### Interpretation

Consistent with several other studies, the current study did not find a statistically significant association between maternal psychological distress and infant FA. However, there was a tendency towards increased risk of infant FA among those whose mother experienced high level of stress or depression during pregnancy. Altered HPA axis and inflammatory response, increased cortisol levels, DNA methylation, or maternal gut microbiota are all possible mechanisms, which need further exploration.

#### Limitation

A rather small sample size with no physiological measure of maternal prenatal stress.

### CONCLUSION

This study suggests a possible association between maternal prenatal stress and depression with infant development of FA.

Future studies with a larger sample size and multiple timepoints assessment of maternal psychological distress are necessary to confirm this finding.

### ACKNOWLEDGEMENTS

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