



RACP Foundation Research Awards

FINAL REPORT

Project / Program Title	Identifying biomarkers of excessive gestational weight gain	
Name	Dr Kalpana (Priya) Sumithran	
Award Received	2018 RACP Research Establishment Fellowship	
Report Date	July 2019	
Chief Investigator / Supervisor	Dr Elif Ekinci	
Administering Institution	University of Melbourne	
Funding Period	Start Date:	01 January 2018
	Finish Date:	30 June 2019

PROJECT SUMMARY

This study will examine whether there are differences in circulating hormones and in DNA methylation (a process by which genes may be switched on or off) in genes involved in appetite and growth, between women who gain more weight than is recommended during pregnancy, compared to those who do not. The eventual goal of this is to be able to identify women who are predisposed to excessive gestational weight gain, to whom targeted assistance could be offered, in order to prevent the increased risk of pregnancy complications and longer-term cardiometabolic risks associated with excessive pregnancy-related weight gain and retention.

PROJECT AIMS / OBJECTIVES

The overall aim of this research plan was to identify markers of excessive gestational weight gain. A cross-sectional study was conducted to identify biological differences between women without previous obesity, whose gestational weight gain during the current pregnancy was within or above the recommended range of 11.5 to 16 kg.

We hypothesised that differences in epigenetic marks in genes relevant to weight regulation and/or in hormones involved in appetite, energy balance, and pregnancy would be identifiable between women without obesity who gained excessive weight during pregnancy, and those who did not.

SIGNIFICANCE AND OUTCOMES

Our goal is to find markers to identify women at risk of excessive pregnancy-related weight gain. This is important because excessive gestational weight gain and post-partum weight retention are risk factors not only for adverse outcomes in the next pregnancy, but also for longer-term obesity and metabolic dysfunction in both mother and child. Once established, obesity is a chronic, treatment-resistant condition, which has a detrimental effect on physical and mental health and health-related quality of life, as well as generating considerable economic costs. Therefore, prospectively identifying women at risk of excessive GWG may allow targeted delivery of interventions to prevent the development of long-term obesity associated complications.

This cross-sectional study will provide preliminary data and inform sample size calculations for a planned larger longitudinal study to identify epigenetic marks associated with excessive pregnancy-associated weight gain and retention.

PUBLICATIONS / PRESENTATIONS

One paper relating to the hormone data has been submitted for publication (under review). A second paper with the epigenetic and gene expression analyses is expected to be written and published in late 2019.

ACKNOWLEDGEMENTS

I am very grateful to the RACP for their support and the opportunity this award has given me to conduct this study. This project has allowed me to develop collaborations with researchers at two different institutions.