

**PHYSICAL ACTIVITY DURING PREGNANCY AMONG WOMEN WHO
ARE OVERWEIGHT OR OBESE**

Zhixian Sui

B.HN, MHISc

Discipline of Obstetrics and Gynaecology

School of Paediatrics and Reproductive Health

Faculty of Health Sciences

The University of Adelaide

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LIST OF ABBREVIATIONS

BMI:	body mass index
CI:	confidence interval
GDM:	gestational diabetes mellitus
GWG:	gestational weight gain
HBM:	health belief model
HC:	head circumference
IOL:	induction of labour
IOM:	Institute of Medicine
LGA:	large for gestational age
NICU:	neonatal intensive care unit
OGTT:	oral glucose tolerance test
OR:	odds ratio
RCT:	randomised controlled trial
RR:	risk ratio
SGA:	small for gestational age
WHO:	World Health Organisation

ABSTRACT

Background

Being overweight or obese during pregnancy and having excessive gestational weight gain increase the risk of many adverse maternal and neonatal health outcomes. Exercise is beneficial during pregnancy. However, physical activity pattern during pregnancy, the effect of exercise on maternal and neonatal health outcomes, and women's perception of making healthy change remains unclear.

Aims

The aims of this thesis were, for women who are overweight or obese during pregnancy, to

- Describe physical activity patterns during pregnancy;
- Evaluate available evidence about antenatal exercise interventions;
- Test the effects of an antenatal exercise intervention in a randomised controlled trial; and
- Explore women's perceptions of making healthy changes during pregnancy.

Methods

To evaluate the above aims, the following methodology was employed:

- A nested prospective cohort study to evaluate physical activity;
- A systematic review and meta analysis using standard Cochrane methodology;
- A randomised controlled trial of an antenatal walking intervention and incorporation of the findings into a meta-analyses of previous literature; and
- A mixed-methods investigation of women's perception of making healthy change during pregnancy.

Results

- In women who were overweight or obese, physical activity declined significantly between early pregnancy and 36 weeks' gestation, before increasing after birth. Physical activity at four months post-partum remained lower than that in early pregnancy. Women with higher BMI had a greater decline in physical activity over pregnancy.
- There was no significant effect of a simple supervised antenatal walking group on gestational weight gain and other clinical maternal and neonatal health outcomes, as confirmed by a meta-analysis of previous trials, despite better physical fitness and activity level represented by higher commuting and leisure activity in late pregnancy.
- A large proportion of women do not consider excessive gestational weight gain to be a concern, with limited awareness of neonatal complications. Women's barriers to making healthy behaviour changes were highly individualised with limited perception of benefits. Furthermore, women were not confident in their ability to make changes.

Conclusions

While providing a walking group is associated with some increase in self reported physical activity, further studies should identify effective strategies to facilitate an increase in leisure activity during pregnancy, overcome perceived barriers, and educate women about both the neonatal health consequences of maternal obesity and health benefits associated with exercise.

DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Zhixian Sui and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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AUTHOR'S CONTRIBUTION

I have been responsible for the design and development of the methodological and analytical processes contained within this thesis. Specifically, I performed the data collection and analysis contained in chapters 3, 4, 5, 6 and 7. I personally contacted women and supervised the exercise sessions for the WALK randomised trial, in addition to developing participant information sheets and data collection sheets. I personally conducted the face-to-face interviews with women that form the basis for the mixed-methods study described in chapter 7, in addition to conducting the analysis. Professor Jodie Dodd, and Dr. Rosalie Grivell independently assessed studies for inclusion in the meta-analysis in chapter 3, and I have received statistical support from Dr. Lisa Yelland in the analysis of the WALK randomised trial. Additionally, I have received methodological advice from Professor Jodie Dodd, Professor Deborah Turnbull and Professor Caroline Crowther into aspects of the individual studies. However, the interpretation of the data and any errors in there are my responsibility.