

Antenatal Weighing & Gestational Weight Gain

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**A thesis submitted to the University of Newcastle, Australia in fulfilment of the
requirements for the Degree of**

Doctor of Philosophy (Community Medicine & Clinical Epidemiology)

The research was supported by an Australian Government Research Training Program (RTP)
Scholarship

DECLARATIONS

Statement 1

Statement of Originality

I hereby certify that the work embodied in the thesis is my own work, conducted under normal supervision. The thesis contains no material which has been accepted, or is being examined, for the award of any other degree or diploma in any university or other tertiary institution 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. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968 and any approved embargo.

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I hereby certify that this thesis is in the form of a series of papers. I have included as part of the thesis a written declaration from each co-author, endorsed in writing by the Faculty Assistant Dean (Research Training), attesting to my contribution to any jointly authored papers.

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By signing below, I confirm that the Research Higher Degree candidate **Shanna Maree Fealy** contributed to the research question, methodological design, data analysis, data interpretation and writing of the listed manuscripts included in this thesis by publication.

1. **Fealy, S.**, Taylor, R.M., Foureur, M., Attia, J., Ebert, L., Bisquera, A., & Hure, A. J. (2017). Weighing as a stand-alone intervention does not reduce excessive gestational weight gain compared to routine antenatal care: a systematic review and meta-analysis of randomised controlled trials. *BMC pregnancy and childbirth*, 17(1), 36: doi.org/10.1186/s12884-016-1207-2
2. **Fealy, S.**, Davis, D., Foureur, M., Attia, J., Hazelton, M., & Hure, A. (2020). The return of weighing in pregnancy: A discussion of evidence and practice. *Women & Birth*, 33(2), 119-124: doi:10.1016/j.wombi.2019.05.014
3. **Fealy, S.**, Attia, J., Leigh, L., Oldmeadow, C., Hazelton, M., Foureur, M., Collins, C.E., Smith, R., Hure, A. (2021). A revalidation of the Weight Related Behaviours Questionnaire within an Australian Pregnancy Cohort. *Midwifery*, 97: doi.org/10.1016/j.midw.2021.102951
4. **Fealy, S.**, Attia, J., Leigh, L., Oldmeadow, C., Hazelton, M., Foureur, M., Collins, C.E., Smith, R., Hure, A. (2020). Demographic and social-cognitive factors associated with gestational weight gain in an Australian pregnancy cohort. *Eating Behaviors*, 39: doi.org/10.1016/j.eatbeh.2020.101430
5. **Fealy, S.**, Leigh, L., Hazelton, M., Attia, J., Foureur, M., Oldmeadow, C., Collins, C.E., Smith, R., Hure, A. (submitted 4th February 2021). Translation of the Weight Related Behaviours Questionnaire into a short-form psychosocial assessment tool for the detection of women at risk of excessive gestational weight gain. (under review with *Appetite* journal).
6. **Fealy, S.**, Jones, D., Davis, D., Hazelton, M., Foureur, M., Attia, J., Hure, A. (submitted 22nd January 2020). Pregnancy weight a balancing act: The experience and perspectives of women participating in a pilot randomised controlled trial. (under review with *The Qualitative Report* journal).

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Lastly, Shanna you did it!

LIST OF PUBLICATIONS ARISING FROM THIS THESIS

Fealy, S., Taylor, R.M., Foureur, M., Attia, J., Ebert, L., Bisquera, A., & Hure, A. J. (2017). Weighing as a stand-alone intervention does not reduce excessive gestational weight gain compared to routine antenatal care: a systematic review and meta-analysis of randomised controlled trials. *BMC pregnancy and childbirth*, 17(1), 36. doi.org/10.1186/s12884-016-1207-2 **(Chapter 2).**

Fealy, S., Davis, D., Foureur, M., Attia, J., Hazelton, M., & Hure, A. (2020). The return of weighing in pregnancy: A discussion of evidence and practice. *Women & Birth*, 33(2), 119-124. doi.10.1016/j.wombi.2019.05.014 **(Chapter 3).**

Fealy, S., Attia, J., Leigh, L., Oldmeadow, C., Hazelton, M., Foureur, M., Collins, C.E., Smith, R., Hure, A. (2021). A revalidation of the Weight Related Behaviours Questionnaire within an Australian Pregnancy Cohort. *Midwifery*, 97: doi.org/10.1016/j.midw.2021.102951 **(Chapter 4).**

Fealy, S., Attia, J., Leigh, L., Oldmeadow, C., Hazelton, M., Foureur, M., Collins, C.E., Smith, R., Hure, A. (2020). Demographic and social-cognitive factors associated with gestational weight gain in an Australian pregnancy cohort. *Eating Behaviors*, 39. doi.org/10.1016/j.eatbeh.2020.101430 **(Chapter 5).**

MANUSCRIPTS UNDER REVIEW

Fealy, S., Leigh, L., Hazelton, M., Attia, J., Foureur, M., Oldmeadow, C., Collins, C.E., Smith, R., Hure, A. (submitted 4th February 2021). Translation of the Weight Related Behaviours Questionnaire into a short-form psychosocial assessment tool for the detection of women at risk of excessive gestational weight gain. (under review with *Appetite* journal) **(Chapter 6).**

Fealy, S., Jones, D., Davis, D., Hazelton, M., Foureur, M., Attia, J., Hure, A. (submitted 22nd January 2020). Pregnancy weight a balancing act: The experience and perspectives of women participating in a pilot randomised controlled trial. (under review with *The Qualitative Report* journal) **(Chapter 7).**

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PRESENTATIONS ARISING FROM THIS THESIS

1. **Fealy S.**, (2018) Visiting Scholar Travel Grant Scheme presentation, University of Leeds, School of healthcare “Antenatal Weighing and Gestational Weight gain”.
2. **Fealy S.**, (2019) Research Visiting Fellow Grant Scheme, The University of Illinois – Chicago – College of Nursing “Antenatal Weighing and Gestational Weight gain”.

ADDITIONAL PUBLICATIONS CO-AUTHORED DURING CANDIDATURE

Throughout the duration of my candidature, I have worked as an academic lecturer in Nursing and Midwifery for the University of Newcastle, Port Macquarie Campus (2013 – 2019), Charles Sturt University, Port Macquarie Campus (2019 – current) and as a practicing Registered Nurse and Midwife for the Mid North Coast Local Health District (2005 – current). In these roles and in addition to my thesis topic, I have collaborated and contributed to a variety of research projects in the field of Nursing, Midwifery, and Public Health. I have additionally participated in the co-supervision of research higher degree students. This has resulted in the following additional publications and conference proceedings.

1. Hure A, Gresham E, Lai J, Anderson A, Martin J, **Fealy S**, Blumfield M, (2014). Nutrition in pregnancy: The balancing act, *International Journal of Birth and Parent Education*, 1, 7-12.
2. **Fealy, S.**, Hure, A., Browne, G., & Prince, C. (2014). Developing a clinical care pathway for obese pregnant women: A quality improvement project. *Women & Birth*, 27(4), e67-e71.
3. Taylor, R. M., **Fealy, S. M.**, Bisquera, A., Smith, R., Collins, C. E., Evans, T. J., & Hure, A. J. (2017). Effects of nutritional interventions during pregnancy on infant and child cognitive outcomes: A systematic review and meta-analysis. *Nutrients*, 9(11).
4. Barnett, M. J., **Fealy, S.**, & Wilson, A. (2019). Barriers and enablers for smoking cessation amongst pregnant women: An Umbrella Review. *Women & Birth*, 32(4), 310-317.
5. **Fealy, S.**, Chan, S., Wynne, O., Dowse, E., Ebert, L., Ho, R., Zhang, M.W., & Jones, D. (2019). The Support for New Mums Project: A protocol for a pilot randomized controlled trial designed to test a postnatal psychoeducation smartphone application. *Journal of Advanced Nursing*, 75(6), 1347-1359.
6. **Fealy, S.**, Jones, D., Hutton, A., Graham, K., McNeill, L., Sweet, L., & Hazelton, M. (2019). The integration of immersive virtual reality in tertiary nursing and midwifery education: A scoping review. *Nurse Education Today*, 79, 14-19.

7. Dowse, E., Chan, S., Ebert, L., Wynne, O., Thomas, S., Jones, D., **Fealy, S.**, Evans, T.J., & Oldmeadow, C. (2020). Impact of Perinatal Depression and Anxiety on Birth Outcomes: A Retrospective Data Analysis. *Maternal and Child Health Journal*, 24, 718-726.

Book Chapter

Jones, D., Hazelton, M., Evans, D., Pento, V., Siang See, Z., Van Leugenhaege, L., & **Fealy, S.** (in press) The Road to Birth: Using Extended Reality to visualize pregnancy anatomy. In *Human-centric Computing and Information Sciences - Digital Anatomy*, Springer.

Published Conference proceedings

1. **Fealy, S.**, Jones, D., Ebert, L., Dowse, E., Wynne, O., & Chan, S. (2017). “Supporting new Mums”—Developing a postnatal psycho-educational smartphone application for first time mothers. *Women & Birth*, 30, 31.
2. Tierney, O., & **Fealy, S.** (2017). Postnatal Maternity Outpatient Clinic: An innovation in postnatal care. *Women & Birth*, 30, 32.
3. Jones, D., Siang See, Z., Billingham, M., Goodman, L., & **Fealy, S.** (2019). Extended Reality for Midwifery Learning: MR VR Demonstration. In *The 17th International Conference on Virtual-Reality Continuum and its Applications in Industry*, 1-2.

Unpublished Conference proceedings

1. **Fealy, S.**, & Tierney, O. (2014). Not “Just” a Midwife: The future face of Midwifery. *Southern Cross University Nursing & Midwifery Conference*, Coffs Harbour.
2. **Fealy, S.**, & Prince, C. (2014). Addressing Obesity in Pregnancy in the Hastings Macleay. *Southern Cross University Nursing & Midwifery Conference*, Coffs Harbour, Australia.
3. **Fealy, S.**, Tierney, O., Jones, D., & Ebert, L. (2014). Midwifery Student’s Perceptions of Working with Midwifery Lecturers During Clinical Placement, *Queensland State Midwifery Conference; Midwives-The Next Generation*, Gold Coast, Queensland, Australia.

4. **Fealy, S., & Tierney, O.** (2016) Developing a “Postnatal Maternity Outpatient Clinic (PMOC). *Mid North Coast Local Health District Rural Innovation and Research Symposium*, Coffs Harbour, Australia.
5. **Fealy, S., Jones, D., Ebert, L., Dowse, E., Wynne, O., Zhang, M., Ho, R., & Chan, S.** (2016). Developing a “Postnatal Psychoeducational” smartphone application for first time mothers. *E-Mental Health International Conference*. Centre for Brain and Mental Health Research, Newcastle, Australia.
6. **Fealy, S., Jones, D., Ebert, L., Dowse, E., Wynne, O., Zhang, M., Ho, R., & Chan, S.** (2017). Supporting New Mums “Postnatal Psychoeducational” smartphone application for first time mothers. *Mid North Coast Local Health District Rural Innovation and Research Symposium*, Coffs Harbour, Australia.
7. **Jones, D., & Fealy, S.** (2018) Keynote speakers – “Immersive technology in nursing and midwifery education: virtual and augmented technology”. *New South Wales (NSW) Nurses and Midwives Association Professional Day*, Rosehill, New South Wales, Australia.
8. **Jones, D., & Fealy, S.** (2018). Invited Speakers - “The Road to Birth”. *International IEEE-GEM conference*, Galway Ireland.
9. **Jones, D., & Fealy, S.** (2018). “Invited guest presentation – “Compromised neonate virtual reality project”. iLife team Oxford University, United Kingdom.
10. **Jones, D., & Fealy, S.** (2019). Research Visiting Scheme – “Road to Birth Digital Technology presentation”. *The University of Illinois – College of Medicine*, Champaign / Urbana, Illinois, United States of America.
11. **Jones, D., & Fealy, S.** (2019). Research Visiting Scheme – “Road to Birth Digital Technology presentation”. *Carle Foundation Hospital - Research Institute personnel*, Champaign / Urbana, Illinois, United States of America.

12. Jones, D., & **Fealy, S.** (2019). Research Visiting Scheme – “Road to Birth Digital Technology presentation”. *The University of Illinois – Chicago College of Nursing*, Chicago, United States of America.
13. Jones, D., & **Fealy, S.** (2020). Lightening talk – “Transformative technologies virtual and mixed realities in health education and research”. *Charles Sturt University - Faculty of Sciences Teaching and Learning Forum*, Wagga Wagga, New South Wales, Australia.
14. Jones, D., & **Fealy, S.** (2020) Invited speakers – “Anatomy in The Digital Age Webinar – Immersive Technology in Maternity Care”. *French Academy of Surgery*, Paris, France via *ZOOM*.

AWARDS OBTAINED DURING CANDIDATURE

1. 2014 – Australian Government Research Training Program (RTP) Scholarship.
2. 2014 - University of Newcastle, Faculty of Health, Teaching Excellence Award.
3. 2015 - The Mid North Coast Local Health District Quality & Innovation Grant, (\$5,000), Establishment of the Postnatal Maternity Outpatient Clinic (PMOC).
4. 2016 - The Mid North Coast Local Health District Higher Degree by Research Support Grant, (\$1,500), contribution towards open access publication of PhD systematic review manuscript.
5. 2016 - The Mid North Coast Local Health District Research Support Grant, (\$17,697), Supporting New Mums: A psychoeducation application, pilot randomised controlled trial.
6. 2017 - Hunter Medical Research Institute (HMRI) Project Grant, (\$20,000), Supporting New Mums: psychoeducation application, pilot randomised controlled trial.
7. 2017 – School of Nursing and Midwifery Travel Grant, (\$1,000), contribution towards attendance at the Australian College of Midwives, National Conference, Adelaide.
8. Faculty of Health and Medicine Research Conference Travel Grant, (\$750), contribution towards attendance at the Australian College of Midwives, National Conference, Adelaide.
9. 2017 - School of Nursing and Midwifery Travel Grant, (\$500), contribution towards attendance at the Newcastle Nursing and Midwifery Conference.
10. 2018 – Commonwealth Scientific and Industrial Research Organisation (CSIRO) ON Prime and ON Accelerate grant funding, (\$25,000).
11. 2018 – School of Nursing and Midwifery Travel Grant, (\$500), contribution towards attendance at the International Conference, IEEE- GEM Galway Ireland.
12. 2018 - Faculty of Health and Medicine Research Conference Travel Grant, (\$2,000), contribution towards attendance at the International Conference, IEEE- GEM Galway Ireland.
13. 2019 - Faculty of Health and Medicine Research Visiting Fellow Grant, (\$6,000), contribution towards travel to the University of Illinois, Champaign /Urbana and Chicago Campuses, to establish research relationships.

CONTRIBUTION STATEMENT

The body of work detailed in this thesis by publication has resulted in six publications. I was the PhD student responsible for this project. A summary of my contributions and involvement are detailed below.

Chapter 2

Weighing as a stand-alone intervention does not reduce excessive gestational weight gain compared to routine antenatal care: a systematic review and meta-analysis of randomised controlled trials

I was the primary reviewer and lead author of this systematic review. The majority of support and guidance during the review and manuscript development process was provided by primary supervisor Dr Alexis Hure. Specifically, Dr Hure conceived the study and provided guidance with the design and writing of the review protocol, inclusion/exclusion criteria, initial screening of retrieved articles, checked data extraction and contributed to the drafting, editing and review of the manuscript. With the support of research librarian Debbie Booth, I designed and conducted the initial and final primary and secondary literature search strategies. I lead the screening process, quality appraisal process, data extraction process and was responsible for coordination and writing of the review manuscript and responding to reviewer comments during the peer review publication process. Fellow colleague Dr Rachel Taylor was the second reviewer contributing to the article screening process, quality appraisal process, and contributed to editing the manuscript for publication. Statistical analysis was conducted by Dr Alessandra Bisquera an external statistician from the Hunter Medical Research Institute Clinical Research Design and Statistics unit. Dr John Attia provided additional guidance with the study design, interpretation of statistical data, editing and reviewing of the systematic review manuscript. Both Dr Maralyn Foureur and Dr Lyn Ebert contributed to the editing of the manuscript and assisted with responding to reviewer comments during the peer review publication process.

Chapter 3

The return of weighing in pregnancy: A discussion of evidence and practice

I was the lead author of this narrative review and synthesis. Specifically, I was responsible for the article's conceptualisation, design, writing of the manuscript for publication and responding to reviewer comments during the peer review publication process. Dr Alexis Hure contributed to the paper's development, editing, and reviewing the manuscript. Dr Maralyn Foureur, Dr Deborah Davis, Dr John Attia and Dr Michael Hazelton all contributed by editing and reviewing the manuscript before and after submission to the peer reviewed journal *Women & Birth*.

Chapters 4 – 6

The Weight-Related Behaviours Questionnaire

The Weight-Related Behaviours Questionnaire (WRB-Q) was originally developed and validated by researchers from the United States of America within a large pregnancy cohort, recruited between March 1995 - December 1996. The questionnaire was deployed for the collection of psychosocial data as part of the Women and Their Children's Health (WATCH) prospective longitudinal cohort study.

The Women and Their Children's Health (WATCH) prospective longitudinal cohort study

Formative work on the WATCH study was conducted by Dr Alexis Hure and senior researchers Dr Roger Smith and Dr Clare Collins. The study was initially conducted to investigate the developmental origins of health and adult disease specifically, investigating maternal and child health, nutrition, and health behaviour, from pregnancy up to four years post birth. This thesis involves analysis of WATCH cohort data, specifically analysis of the WRB-Q data collected between June 2006 and December 2007. This data has been used to inform the following thesis chapters.

1. A revalidation of the Weight-Related Behaviours Questionnaire within an Australian pregnancy cohort (**Chapter 4**).
2. Demographic and social-cognitive factors associated with gestational weight gain in an Australian Pregnancy Cohort (**Chapter 5**).

3. Translation of the Weight-Related Behaviours Questionnaire into a short-form psychosocial assessment tool for the detection of women at risk of excessive gestational weight gain (**Chapter 6**).

I was the research lead for all the above listed studies. Specifically, I contributed by assisting with the overall research conceptualisation, data extraction, interpretation of results, full manuscript preparation, submission of articles for publication and responding to peer review comments. Dr Alexis Hure provided primary supervision and guidance contributing to the studies conceptualisation, design, manuscript preparation, editing and review of all manuscripts. Statistical methodology and analysis for the three manuscripts were performed by Dr Lucy Leigh and Dr Christopher Oldmeadow, external statisticians from the Hunter Medical Research Institute. Dr John Attia provided additional statistical support and contributed by reviewing interpretation of statistical results, editing and reviewing of all manuscripts. Dr Michael Hazelton and Dr Maralyn Foureur contributed by editing and reviewing all manuscripts. Dr Clare Collins and Dr Roger Smith were lead researchers of the WATCH study and contributed to the listed studies by providing permissions for use of WATCH study data, editing and reviewing all manuscripts.

Chapter 7

The Eating 4 Two Pilot Randomised Controlled Trial

Trial design and intervention development

The Eating 4 Two trial was an Australian pilot multicentre randomised controlled trial conducted under the stewardship of Chief Investigator Dr Deborah Davis from the University of Canberra. The Eating 4 Two trial was a pregnancy weight management trial with the aim to test the effectiveness of a mobile health (mhealth), smartphone / tablet application (app). The Eating 4 Two application was designed by experts in the field of midwifery, nutrition, dietetics and obstetrics, in conjunction with pregnant women. The application was developed for both Apple iOS and Android platforms. All formative work on the design of the Eating 4 Two trial protocol and smartphone application was conducted by Chief Investigator Dr Deborah Davis and her research team. I was responsible for the conduct of research for one arm of the Eating 4 two trial within one regional New South Wales trial site, as the research midwife.

Ethics approval

I was responsible for obtaining ethical approval for the Eating for Two trial in the state of New South Wales. This involved the preparation, submission and obtaining ethical approvals from the Mid North Coast Local Health District, Human Research Ethics Committee (HREC) and the University of Newcastle's HREC, due to the original research protocol being approved by the Australian Capital Territory HREC only.

- Australian Capital Territory Human Research Ethics Committee: HREC/17/ACT/1 (**Appendix A11**).
- Mid North Coast Local Health Human Research Ethics Committee: SSA/17/NCC/13 (**Appendix A12**).
- University of Newcastle Human Research Ethics Committee: H-2017-0074 (**Appendix A13**).

This process involved translating and completing all ethics and health district site specific documentation and liaising with industry stakeholders such as clinical governance representatives, directors of nursing and midwifery, midwifery unit managers and midwifery staff. It also involved the adaption of the Eating 4 Two protocol and associated participant information statements and consent forms, to the regional trial site (**Appendix A14 and A15**).

Participant recruitment

I was the research midwife for this trial site and coordinated the screening and recruitment of participants in this arm of the Eating 4 Two study. This involved engagement with health service management, staff, the dissemination of recruitment materials and advertisements, as well as liaising with the Hunter Medical Research Institute's media department for the preparation of a social media post to promote the study. I was responsible for following up with interested participants and providing additional trial information as required.

Data collection, entry and management

As the research midwife, I was responsible for collaborating with the Eating 4 Two trial research leads and for the coordination and collation of participant consent forms. I was responsible for the collection and management of trial data from this site. I was additionally responsible for the coordination, conduct of, and transcription of, qualitative interviews at the regional trial site.

Data analysis

The Eating 4 Two trial chief investigator Dr Deborah Davis gave permission for me to analyse the qualitative interview data collected at the regional trial site and allowed for the data to contribute to this thesis. I conceptualised the qualitative study featured within this chapter choosing a qualitative descriptive methodology and lead the qualitative data analysis. Dr Donovan Jones and co-supervisor Dr Michael Hazelton contributed to the data analysis process. Qualitative data was de-identified and then transcribed verbatim by an external transcription service. Transcriptions were then transferred to, and managed in, the qualitative software program NVivo.

Pregnancy weight gain a balancing act: The experience and perspectives of women participating in a pilot randomised controlled trial (Chapter 7).

I was the lead author for this qualitative study paper responsible for the conceptualisation, research methodology, analysis, interpretation of results, full manuscript preparation and submission for peer review. Dr Alexis Hure contributed to the development, editing, and reviewing of the manuscript. Dr Donovan Jones and Dr Michael Hazelton contributed to the qualitative analysis and interpretation of findings as well as contributed to editing of the manuscript. Dr John Attia and Dr Maralyn Foureur contributed by editing and reviewing the manuscript for publication. Dr Deborah Davis was the Chief Investigator of the Eating 4 Two trial and contributed to the study by providing permissions for use of trial data and manuscript editing and review.

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LIST OF ABBREVIATIONS

| | |
|--------|---|
| AtWG | Attitudes towards Weight Gain |
| AUC | Area Under the Curve |
| BI | Body Image |
| BMI | Body Mass Index |
| CI | Confidence Interval |
| CO | Career Orientation |
| COREQ | Consolidated criteria for Reporting Qualitative research |
| COSMIN | Consensus-based Standards for the selection of health Measurement Instruments |
| CFA | Confirmatory Factor Analysis |
| DOHaD | Developmental Origins of Health and Disease |
| EGWG | Excessive Gestational Weight Gain |
| EFA | Exploratory Factor Analysis |
| FaMR | Feelings about the Motherhood Role |
| GDM | Gestational Diabetes Mellitus |
| GRM | Graded Response Model |
| GWG | Gestational Weight Gain |
| ICC | Item Characteristic Curve |
| IIF | Item Information Function |
| IGWG | Inadequate Gestational Weight Gain |
| IOM | American Institute of Medicine |
| IRT | Item Response Theory |
| NHMRC | Australian National Health and Medical research Council |
| NICE | British National Institute of Health and Care Excellence |
| NSW | New South Wales |
| OR | Odds Ratio |

| | |
|-----------------|--|
| PE | Pre-eclampsia |
| PIH | Pregnancy Induced Hypertension |
| PRECEDE/PROCEED | Predisposing, Reinforcing, and Enabling Constructs in Educational and Environmental Diagnosis and Evaluation / Policy, Regulatory and Organisational Constructs in Educational Environmental Development |
| PRISMA | Preferred Reporting Items for Systematic Reviews and Meta-Analysis |
| RCT | Randomised Controlled Trial |
| RR | Risk Ratio |
| SAS | Statistical Analysis System |
| SCT | Social Cognitive Theory |
| SE | Self-Efficacy |
| STROBE | Strengthening the Reporting of Observational studies in Epidemiology |
| UK | United Kingdom |
| USA | United States of America |
| WATCH | Woman and Their Children's Health Study |
| WHO | World Health Organization |
| WLOC | Weight Locus of Control |
| WMD | Weighted Mean Difference |
| WRB-Q | Weight-Related Behaviours Questionnaire |
| WRPD | Weight Related Psychological Distress |

THESIS ABSTRACT

Background

There is no clear guidance on how best to support women to achieve healthy gestational weight gain. The dominant physiological approach of energy in / energy out for weight management, such as diet and exercise interventions, has demonstrated moderate effectiveness at best for optimising gestational weight gain. Increasingly, routine antenatal weighing is being used to monitor women against gestational weight gain targets. However, to optimise pregnancy weight gain, broader socio-ecological approaches to physical and mental health in pregnancy are required.

Objectives

The primary objectives of this thesis are twofold; 1) To investigate the effectiveness of antenatal weight-monitoring as a health promotion strategy for optimising pregnancy weight gain; and 2) To explore the psychosocial factors associated with weight gain in pregnancy.

Methods

A thesis by publication inclusive of a series of six distinct but complementary publications, using a variety of research designs and methodologies were devised to address specific research aims as follows.

Aim 1: Perform a systematic review of the literature to ascertain the effectiveness of routine antenatal weighing as a stand-alone intervention to reduce excessive pregnancy weight gain.

Aim 2: Conduct a narrative review and evidence synthesise in response to the Australian Department of Health, *Pregnancy Care Guidelines*, recommending the re-introduction of routine antenatal weighing.

Aim 3: Perform a revalidation of the Weight-Related Behaviours Questionnaire, originally designed and tested in a pregnancy cohort in the United States, within an Australian pregnancy cohort.

Aim 4: Identify and describe the demographic and psychosocial factors predictive of excessive gestational weight gain, within an Australian pregnancy cohort.

Aim 5: Develop a short-form, psychosocial assessment tool for the detection of women at risk of excessive gestational weight gain.

Aim 6: Perform a qualitative analysis of the experience and perspectives of pregnant women who participated in a pilot weight management randomised controlled trial.

Conclusion

Overall, this program of work concludes existing evidence does not support weight-monitoring as a weight management strategy, with effects on maternal psychology largely unknown. To optimise gestational weight gain, broad socio-ecological approaches to health promotion are required, considering factors like self-efficacy and body image during antenatal care.