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Preventing maternal and early childhood obesity: the fetal flaw in Australian perinatal care

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**PREVENTING MATERNAL AND EARLY CHILDHOOD OBESITY: THE FOETAL FLAW IN
AUSTRALIAN PERINATAL CARE**

Abridged title: Perinatal maternal and child obesity prevention

Abstract

Almost half of Australian women of child-bearing age are overweight or obese, with rates of 30-50% reported in early pregnancy. Maternal adiposity is a costly challenge for Australian obstetric care with associated serious maternal and neonatal complications. Excess gestational weight gain is an important predictor of offspring adiposity into adulthood and higher maternal weight later in life. Current public health and perinatal care approaches in Australia do not adequately address excess perinatal maternal weight or gestational weight gain. This paper argues that the failure of primary health care providers to offer systematic advice and support regarding women's weight and related lifestyle behaviours in the child-bearing years is an outstanding 'missed opportunity' for prevention of inter-generational overweight and obesity. Barriers to action could be addressed through greater attention to: maternal weight management clinical guidelines for the perinatal period; training and support of maternal health care providers to develop skills and confidence in raising weight issues with women; a variety of weight management programs provided by state maternal health services; and clear referral pathways to them. Attention is also required to service systems that clearly define roles in maternal weight management and ensure consistency and continuity of support across the perinatal period.

Key words

gestational weight gain, GPs, midwives

What is known about the topic:

Prevalence of maternal overweight and obesity and excess gestational weight gain is high, with associated high risk of immediate and long term adverse health outcomes for the mother and offspring.

26 **What this paper adds:**

27 Missed opportunities in primary health care during the perinatal period for maternal and child obesity
28 prevention are identified along with recommendations for policy and practice to overcome barriers to
29 action.

Extent of the problem

Women's childbearing years are a time of increased risk of unhealthy weight gain. The maternal and child health consequences and costs associated with pre-pregnancy overweight and obesity (OWO) and excess gestational weight gain (GWG) are well documented (Dodd et al. 2011; McIntyre et al. 2012). Of additional concern are the long term consequences of excess GWG; usually defined as pregnancy weight gain greater than Institute of Medicine (IOM) guidelines for pre-pregnancy body mass index (BMI) (Seiga-Riz et al. 2010). Excess GWG is predictive of persistent OWO and associated co-morbidities in postpartum women (Nehring et al. 2011). High maternal pre-pregnancy BMI and excess GWG are also independently predictive of increased child and adolescent adiposity and thus, health consequences across life (Schack-Neilsen et al. 2010).

Almost half of Australian women early in pregnancy (Dodd et al. 2011; McIntyre et al. 2012) and one in five pre-school children (Department of Health and Ageing, 2008) are OWO. One in five pregnant women is obese ($BMI > 30 \text{ kg/m}^2$) with rates of extreme obesity ($BMI > 35 \text{ kg/m}^2$) increasing (Dodd et al. 2011). Half of OWO, a third of normal weight and one fifth of underweight pregnant women in a large Australian study experienced excess GWG (Mamun et al. 2010). Meta-analysis shows that average postpartum maternal weight retention is 3kg after three years, but doubles with excess GWG (Nehring et al. 2011). Not only is this a social and health burden for women but creates a weight liability for subsequent pregnancies, with attendant gestational problems and increased risk of adiposity in the child. Dietary intake and physical activity are critical influences on weight, yet few women before, during or after pregnancy meet national guidelines for physical activity or diet (Wilkinson et al. 2009; McLeod et al. 2011).

These data highlight the need to support women to achieve healthier diet and lifestyles to help prevent inter-generational OWO. This article examines under-used opportunities in Australia during the perinatal period for maternal and child obesity prevention and proposes ways in which health care policy, systems

and programs could assist care providers to offer healthy weight support to women in their childbearing years.

Promising approaches and missed opportunities in perinatal care

The childbearing years represent a crucial time when mothers' diet and physical activity, and in turn weight trajectories may be improved. Pregnant women actively seek advice about their own health behaviours in the first trimester and are highly motivated to achieve the best outcomes for their child (Wilkinson and Toucher 2010). However, low awareness of the risks of perinatal adiposity is evident amongst women (Olander et al. 2011) and an evidence-practice gap exists amongst health professionals (Wilkinson and Stapleton, 2012). Randomised trials and meta-analyses show that behavioural interventions can improve diet and/or physical activity during pregnancy (Gardner et al. 2011); help optimise gestational weight gain in women of any weight (Keller et al. 2008); and reduce retention of weight gained in pregnancy (van der Plight et al, 2013).

In Australia, opportunities exist across the continuum of perinatal care where women can be supported by primary health care providers (PHCPs), particularly general medical practitioners (GPs), midwives and child health nurses to achieve positive lifestyle changes that may promote healthy weight. Research suggests that women follow advice provided by health care providers (Ferrari et al. 2010). However, perinatal women in Australia infrequently receive advice from health professionals about weight or lifestyle, although they would have liked to receive more (Wilkinson and Tolcher 2010).

Before pregnancy is the optimum time to modify lifestyle and to achieve a healthy weight. However, whilst 53% of women in a Brisbane sample reported having a preconception health check with a doctor, just 17% of those overweight and obese reported being advised by a doctor to lose weight (Callaway et al. 2009). The first and indeed all subsequent antenatal consultations with GPs and other PHCPs offer opportunities to assess weight, and to provide support regarding healthy GWG and lifestyle to achieve it. PHCPs are influential in shaping maternal GWG goals, which in turn are an important predictor of actual

78 GWG (Brown et al. 2012). However, qualitative studies of views of Australian GPs and midwives
79 regarding the management and assessment of GWG revealed that whilst both groups were aware of the
80 importance of healthy GWG, routine weighing was not standard practice – and that barriers such as time,
81 remuneration and capacity prevented engaging women about healthy weight in pregnancy (van der Pligt
82 et al. 2011; Willcox et al. 2012). The absence of weight related policy was identified by midwives as a
83 key barrier to weight monitoring and identification of excess GWG. Nevertheless, the midwives viewed
84 themselves as key providers of healthy lifestyle advice and expressed the desire to spend more time with
85 women to provide this information and education.

86 Postpartum maternal health checks provide an opportunity to assess gestational weight retention, discuss
87 weight management options, encourage maintenance of breastfeeding, establish healthy lifestyle goals
88 and identify appropriate support services. Maternal physical activity is a strong inverse predictor of
89 gestational weight retention after 12 months (Mamum et al. 2010), yet women receive inadequate advice
90 on perinatal physical activity and perceive limited provider knowledge on safe perinatal exercise intensity
91 and frequency (Stengel et al. 2012). Attention to nutrition education is also important, as higher maternal
92 nutrition knowledge is associated with better maternal diet quality (McLeod et al. 2011) and less
93 gestational weight retention (Nuss et al. 2007), especially amongst socially disadvantaged women. PHCP
94 awareness of community support services for young mothers is important as interventions are more likely
95 to engage new mothers if they are low-intensity, inexpensive, locally and culturally focused and can
96 include the child (Keller et al. 2008).

97 Child, community and practice nurses could play an active, ongoing role in encouraging mothers to adopt
98 healthy family lifestyles to benefit themselves and their children, yet organisational policies and
99 structures, professional relationships and boundaries as well as staff attitudes, knowledge, skill and
100 training barriers hamper action (Hearn et al. 2007). More effective communication, formal links and role
101 definition between PHCPs and with hospital services are needed in relation to promotion and monitoring

of maternal healthy lifestyle and weight to enhance integrated continuity of care in the inter-partum period.

The absence of PHCP engagement with women regarding healthy weight at any point in the childbearing cycle, and moreover, the failure to build women's capacity around how to achieve healthy weight are currently opportunities lost. This is a time in women's lives of increased risk for adiposity but also a time of increased health service engagement and receptivity. Women want the best for their children, and understanding that their own BMI may impact their unborn child's BMI, and that their own lifestyle habits will shape the habits of their children, are likely great motivators for health behaviour change. The omission of discussions regarding healthy weight attainment could be conceived by women as confirmation that weight status is not important (Olander et al. 2011). Like adults generally, many pregnant women and health professionals are inaccurate in their categorisation of body weight, perhaps reflecting 'creeping normality' (Schmied et al. 2011). In one Australian study, a significant proportion of women OWO in early pregnancy assessed their weight below their BMI category, and those who inaccurately assessed weight had twice the risk of unhealthy GWG (Callaway et al. 2009 check Cogswell). Likewise midwives reported shifting norms in perceptions of high risk weight during pregnancy (Schmied et al. 2011). Without reference to GWG guidelines, routine weight assessment and advice, and community awareness of the risks of excess obesity in pregnancy, this misclassification of body weight may limit action by peri-natal women to seek and act on information to help weight management.

Implications for policy and practice

Barriers to primary care provider engagement in obesity prevention during the perinatal period occur at practitioner, service and system level (Hearn et al. 2007). Practitioner issues include sensitivity to raising the issue of overweight, weight bias or personal problems with weight, pessimism about success of weight management, and the need for appropriate information and training to help broach the issue and

counsel mothers (Heslehurst et al.2011; van de Pligt et al. 2012; Willcox et al. 2012; Hearn et al. 2007). Service level barriers include limited demand from women; inadequate consultation time and lack of suitable support staff or low cost, local referral services (van de Pligt et al. 2012; Willcox et al. 2012; Hearn et al. 2007). These barriers are compounded at system level by inconsistent weight management and lifestyle advice from many sources and lack of continuity of care across the perinatal period and between hospital, specialist, general practice and public health services (Hearn et al. 2007; Schmied et al. 2011).

The first priority to improve the situation should be increased promotion and implementation of maternal weight management clinical guidelines for the perinatal period. The US IOM guidelines provide leadership in this area and the Victorian, South Australian and Queensland governments have recently taken steps in this direction. Overall, these guidelines include maternal weight assessment and optimisation in pre-pregnancy counselling; first trimester ascertainment and discussion with pregnant women of ideal GWG based on pre-pregnancy BMI and its importance to maternal and child health outcomes; provision of advice to all women about healthy diet and physical activity before, during and after pregnancy; referral for dietetic advice for OWO women; monitoring of weight gain against the optimum at each antenatal visit coupled with lifestyle advice or referral; and encouragement to breastfeed. Finally, recommended postnatal checks include BMI assessment and discussion of weight management goals and appropriate lifestyle advice or referral. Key elements are shown in Table 1.

Translating guidelines into practice presents additional challenges. Dietary guidance during pregnancy is well established and recognised as important by PHCPs (van de Pligt et al. 2012), but physical activity guidelines during pregnancy and postpartum need to be clarified and promoted amongst pregnant women and health professionals (Stengal et al. 2012). Likewise, the importance of perinatal maternal weight management needs increased emphasis with PHCPs (Olander et al. 2011) and system level attention to ensure integrated service delivery. Siega-Riz et al (2010) provide guidance for establishment of service protocols that clearly define the roles of different PHCPs in integrated implementation of the IOM

guidelines across the perinatal period. Medicare Locals, funded from 2011 by the Commonwealth government with a mandate to deliver more coordinated, integrated, locally responsive and flexible primary health care (DOHA, 2013), offer a new opportunity for planning and implementing a system wide approach to perinatal maternal weight management.

Given the high proportion of women starting pregnancy OWO and exceeding optimal GWG, universal access to weight management programs is needed in maternal health services. A variety of approaches are desirable to address the needs of different women. Verbal, written or online information may be sufficient to motivate some women to positively change diet and/or physical activity, and offer wide reach at low cost; some will benefit from group support, whilst others will need individual guidance (Wilkinson et al. 2013; Ferrari et al. 2010; Teate et al. 2011). Whilst a multi-faceted approach including individual counselling with dietitians and exercise health professionals may be effective to optimise gestational weight gain in obese pregnant women (Dodd et al. 2011), the resource intensity may not be sustainable at a population level.

Development of services that engage women to address their obesity has been recommended as a solution in the UK (Heslehurst et al. 2011). Simple advice to OWO pregnant women regarding their weight gain target and instruction to weigh weekly resulted in reduced weight gain in the overweight women (Jefferies et al. 2009). A Victorian trial will provide evidence related to effectiveness of this approach in a continuity of midwifery care model (Nagel et al. 2011). Various face-to-face group programs, both antenatal (Teate et al. 2011; Davis et al. 2011), postnatal (Monteiro et al, 2011; Lioret et al, 2012), and across the continuum (Scouteris et al. 2012) show promise to change weight, as well as provide social support for women and wide population reach. However, group approaches may fail to engage some women because of inconvenient timing and other access issues (Davis et al. 2011). Local services are important to facilitate access and programs that incorporate online access via internet, email and mobile phone SMS and apps may engage women anywhere anytime (Fjeldsoe et al. 2010; Jones et al. 2010; Willcox et al. 2012).

Coupled with clinical guidelines and increased referral options is the need for maternal health care providers to develop skills and confidence in raising the issue of weight management with women. Whilst health care professionals have concerns about offending, alienating or alarming women by raising the issue (van de Pligt et al. 2011; Willcox et al. 2012), reducing maternal overweight and preventing excess gestational weight gain are essential to the short and long term health and wellbeing of the mother and child. Timely medical advice and followup can be a critical motivator for lifestyle change (Ferrari et al. 2010). Routine but sensitive attention to the issue by health professionals may help to reduce the culture of normality that is now evident for OWO in the community.

Conclusions

The predominant approach in Australia of providing no systematic advice regarding women's weight in the child-bearing years represents an outstanding missed opportunity for primary and secondary prevention of maternal and child OWO. Attention by health professionals to maternal weight and GWG goals will raise the profile of the issue with mothers and the community and in turn provide significant capacity to influence weight gain trajectories for women and children across the life-course.

Barriers to action could be addressed through wider application of maternal weight management clinical guidelines for the perinatal period; a variety of healthy lifestyle and weight management programs provided by state maternal health services with clear referral pathways to them; and training and support of maternal PHCPs to develop skills and confidence in raising the sensitive issue of weight management with women. Service systems are also needed that clearly define roles and routinely engage PHCPs in maternal weight management so that consistency and continuity of support is available across the perinatal period.

Conflicts of Interest

None exist

References

Brown MJ, Sinclair M, Liddle D, Hill AJ, Madden E (2012). A systematic review investigating healthy lifestyle interventions incorporating goal setting strategies for preventing excess gestational weight gain. *PLoS ONE* **7**(7): e39503. doi:10.1371/journal.pone.0039503

Callaway LK, O'Callaghan MJO, McIntyre HD (2009) Barriers to addressing overweight and obesity before conception. *The Medical Journal of Australia* **191**(8): 425-428.

Davis DL, Raymond JE, Clements V, Adams C, Mollart LJ, Teate AJ, Foureur MJ (2011) Addressing obesity in pregnancy: The design and feasibility of an innovative intervention in NSW, Australia. *Women Birth* **25**(4): 174-80. doi: 10.1016/j.wombi.2011.08.008. Epub 2011 Sep 17.

Department of Health and Ageing (2008) '2007 Australian National Children's Nutrition and Physical Activity Survey: Key Findings'. Australian Government: Canberra, ACT.
<http://www.health.gov.au/internet/main/publishing.nsf/Content/phd-nutrition-childrens-survey-keyfindings> (accessed Dec 2012)

Department of Health and Ageing (2013) 'Medicare Locals Accreditation Guidelines'. Australian Government: Canberra, ACT.
<http://www.medicarelocals.gov.au/internet/medicarelocals/publishing.nsf/Content/ML-Accreditation-guidelines~MLA-scheme> (accessed Aug 2013)

Dodd JM, Grivell RM, Nguyen AM, Chan A, Robinson JS (2011) Maternal and perinatal health outcomes by body mass index category. *Australia and New Zealand Journal of Obstetrics and Gynaecology* **51**(2): 136-140.

221 Dodd JM, Turnbull DA, McPhee AJ, Wittert G, Crowther CA, Robinson JS (2011) Limiting weight gain
222 in overweight and obese women during pregnancy to improve health outcomes: the LIMIT randomised
223 controlled trial. *BMC Pregnancy and Childbirth* **11**: 79. doi:10.1186/1471-2393-11-79

224 Ferrari RM, Siega-Riz AM, Evenson KR Moos MK, Melvin CL, Herring AH (2010) Provider advice
225 about weight loss and physical activity in the postpartum period. *Journal of Womens Health* **19**(3): 397-
226 406.

227 Fjeldsoe BS, Miller YD, Marshall AL (2010) MobileMums: a randomised controlled trial of an SMS-
228 based physical activity intervention. *Annals of Behavioural Medicine* **39**(2): 101-111.

229 Gardner B, Wardle J, Poston L, Croker H (2011) Changing diet and physical activity to reduce gestational
230 weight gain: a meta-analysis. *Obesity Reviews* **12**(7): e602-e620

231 Hearn L, Miller M, Cross D (2007) Engaging primary care providers in the promotion of healthy weight
232 amongst young children: Barriers and enablers of policy and management. *Australian Journal of Primary*
233 *Health* **13**: 66-79.

234 Heselhurst N, Moore H, Rankin J, Ells LJ, Wilkinson JR, Summerbell CD (2011) How can maternity
235 services be developed to effectively address maternal obesity? A qualitative study. *Midwifery* **27**(5):
236 e170-e177 doi:10.1016/j.midw.2010.01.007

237 Jeffries K, Shub A, Walker SP, Hiscock R, Permezel M (2009) Reducing excessive weight gain in
238 pregnancy: a randomised controlled trial. *The Medical Journal of Australia* **191** (8): 429-433.

239 Jones R, Wells M, Okely A, Lockyer L, Walton K (2011) Is an online healthy lifestyles program
240 acceptable for parents of preschool children? *Nutrition & Dietetics* **68**(2): 149–154 doi: 10.1111/j.1747-
241 0080.2011.01514.x.

242 Keller C, Records K, Ainsworth B, Permana P, Coonrod DV (2008) Interventions for weight
 243 management in postpartum women. *Journal of Obstetric, Gynaecologic and Neonatal Nursing*
 244 **37**(1): 71-79.

245 Lioret S, Campbell KJ, Crawford D, Spence AC, Hesketh K, McNaughton SA (2012) A parent focused
 246 child obesity prevention intervention improves some mother obesity risk behaviours: the Melbourne
 247 INFANT program. *International Journal of Behavioural Nutrition and Physical Activity* **9**:100. doi:
 248 10.1186/1479-5868-9-100.

249 Mamum A, Kinarivala M, O'Callaghan M, Williams G, Najaman J, Callaway L (2010) Associations of
 250 excessive weight gain during pregnancy with long-term maternal overweight and obesity: evidence from
 251 21 year postpartum follow-up. *The American Journal of Clinical Nutrition* **91**(5): 1336-1341.

252 McIntyre HD, Gibbons KS, Flenady VJ, Calloway LK (2012) Overweight and obesity in Australian
 253 mothers: epidemic or endemic? *The Medical Journal of Australia* **196**: 184-188.

254 McLeod E, Campbell K, Hesketh K (2011) Nutrition Knowledge: A Mediator between Socioeconomic
 255 Position and Diet Quality in Australian First-Time Mothers. *Journal of the American Dietetic Association*
 256 **111**(5): 696-704.

257 Monteiro SMDR, Jancey J, Howat P, Burns S, Jones C, Dhaliwal SS, McManus A, Hills AP, Anderson
 258 AS (2011) The protocol of a randomized controlled trial for playgroup mothers: Reminder on Food,
 259 Relaxation, Exercise, and Support for Health (REFRESH) Program. *BMC Public Health* **11**: 648
 260 doi:10.1186/1471-2458-11-648.

261 Nagle C, Skouteris H, Hotchin A, Bruce L, Patterson D, Teale G (2011) Continuity of midwifery care and
 262 gestational weight gain in obese women: a randomised controlled trial. *BMC Public Health* **11**: 174.
 263 doi:10.1186/1471-2458-11-174.

264 Nehring I, Schmoll S, Beyerlein A, Hauner H, von Kries R (2011) Gestational weight gain and long-term
 265 postpartum weight retention: a meta-analysis. *The American Journal of Clinical Nutrition* **94**(5): 1225-
 266 1231.

267 Nuss, H, Freeland-Graves J, Clarke K, Klohe-Lehman D, Milani T J (2007) Greater nutrition knowledge
 268 is associated with lower 1-year postpartum weight retention in low-income women. *Journal of the*
 269 *American Dietetic Association* **107**(10): 1801-1806.

270 Olander E, Atkinson L, Edmunds J, French D (2011) The views of pre- and post-natal women and health
 271 professionals regarding gestational weight gain: An exploratory study. *Sexual & Reproductive Healthcare*
 272 **2**(1): 43-48.

273 Schack-Nielsen L, Michaelsen KF, Gamborg M, Mortensen EL, Sorensen TI (2010) Gestational weight
 274 gain in relation to offspring body mass index and obesity from infancy through adulthood. *International*
 275 *Journal of Obesity* **34**(1): 67–74.

276 Schmied VA, Diff M, Dahlen HG, Mills AE, Kolt GS (2011) ‘Not waving but drowning’: a study of the
 277 experiences and concerns of midwives and other health professionals caring for obese childbearing
 278 women. *Midwifery* **27**(4): 424-430.

279 Siega-Riz AM, Deierlein A, Stuebe A (2010) Implementation of the new Institute of Medicine gestational
 280 weight gain guidelines. *Journal of Midwifery and Womens Health* **55**(6): 512-519.

281 Skouteris H, McCabe M, Milgrom J, Kent B, Bruce LJ, Mihalopoulos C, Herring SJ, Barnett M,
 282 Patterson D, Teale G, Gale J (2012) Protocol for a randomized controlled trial of a specialized health
 283 coaching intervention to prevent excessive gestational weight gain and postpartum weight retention in
 284 women: the HIPPA study. *BMC Public Health* **12**:78. doi:10.1186/1471-2458-12-78.

285 Stengel MR, Kraschnewski JL, Hwang SW, Kjerulff KH, Chuang CH (2012) "What my doctor didn't tell
 286 me": Examining healthcare provider advice to overweight and obese pregnant women on gestational
 287 weight gain and physical activity. *Womens Health Issues*. **22**(6): e535-40. doi:
 288 10.1016/j.whi.2012.09.004.

289 Teate A, Leap N, Rising SS, Homer CSE (2011) Women's experiences of group antenatal care in
 290 Australia-the Centering Pregnancy Pilot Study. *Midwifery* **27**(2): 138-45. doi:
 291 10.1016/j.midw.2009.03.001.

292 van der Pligt P, Campbell K, Willcox J, Opie J, Denny-Wilson E (2011) Opportunities for primary and
 293 secondary prevention of excess gestational weight gain: General practitioners' perspectives. *BMC Family*
 294 *Practice* **12**: 124 doi:10.1186/1471-2296-12-124.

295 Wilkinson S and Stapleton H (2012) Overweight and obesity in pregnancy: The evidence-practice gap in
 296 staff knowledge, attitudes and practice. *Australian and New Zealand Journal of Obstetrics and*
 297 *Gynaecology* **52**: 588-592.

298 Wilkinson S and Tolcher D (2010) Nutrition and maternal health: What women want and can we provide
 299 it? *Nutrition & Dietetics* **67**(1): 18-25.

300 Wilkinson SA, Miller YD, Watson B (2009) Prevalence of health behaviours in pregnancy at service
 301 entry in a Queensland health service district. *Australia New Zealand Journal of Public Health* **33**(3): 228-
 302 233.

303 Wilkinson SA, Walker A, Tolcher D (2013) Re-evaluation of women's nutritional needs, knowledge, and
 304 behaviours in a tertiary maternity service: Are we meeting women's needs yet? *Nutrition & Dietetics*.doi:
 305 10.1111/1747-0080.12010

306 Willcox JC, Campbell KJ, van der Plight P, Hoban E, Pidd D, Wilkinson S (2012) Excess gestational
307 weight gain: an exploration of midwives' views and practice. *BMC Pregnancy and Childbirth* **12**: 102
308 doi:10.1186/1471-2393-12-102.