

Letters

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Effect of a gestational diabetes management programme on weight after pregnancy

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Gestational diabetes mellitus occurs in 5–10% of pregnant women in Australia [1] and is a major risk factor for developing Type 2 diabetes [2,3], with the rate of progression to Type 2 diabetes reported to be approximately 1.5–2% per year [4]. Management of gestational diabetes tends to focus on short-term outcomes for the pregnancy, but there is also an important opportunity to intervene in the long-term health of these women who are susceptible to developing diabetes. Weight management following a gestational diabetes pregnancy may be an effective way to reduce later diabetes risk [5,6]. Pregnancy is a time when women are likely to be positively influenced by health education, but it is less certain whether such responses are sustained after the pregnancy. We investigated the long-term effectiveness of weight reduction advice given to women attending our gestational diabetes clinic.

Data were extracted from an in-house database of gestational diabetes pregnancies and the Obstetrix™ database (Blacktown Hospital, Blacktown, NSW, Australia) of all women delivering in New South Wales public hospitals. Among 23 156 pregnancies delivering at Blacktown Hospital between 2002 and 2009, 1242 (5.2%) were diagnosed with gestational diabetes and were managed according to a standardized protocol that follows Australasian Diabetes in Pregnancy Society (ADIPS) guidelines [7]. This includes fortnightly review with a diabetes educator, dietician and endocrinologist in a multidisciplinary clinic from diagnosis of gestational diabetes until delivery. Specific advice is given at term regarding the long-term risk of Type 2 diabetes and the benefit of achievement and maintenance of a healthy body weight. This message is reinforced at a single post-partum visit when patients return for a follow-up glucose tolerance test. Our programme does not include any further contact after delivery.

Eighty women were identified who had participated in the gestational diabetes management programme during an index pregnancy and then returned with a subsequent pregnancy during the study period. Each patient with gestational diabetes was age and BMI matched with two to three randomly chosen control subjects without history of previous gestational diabetes. Body weight at the first antenatal visit in each pregnancy was recorded. Weight change between pregnancies was the study variable. This value was normally distributed for women with gestational diabetes and control subjects.

The matching process resulted in the group of those with gestational diabetes and the control group having similar age

(mean 28.4 years), weight (75 kg), BMI (28.4 kg/m²) and gestation (12 weeks) at first visit in the index pregnancy. The mean interval between pregnancies was 2.4 years in those with gestational diabetes and 1.7 years in control subjects. Weight difference between pregnancies was +0.6 kg in the patients with prior gestational diabetes and +3.4 kg in the control subjects ($P = 0.004$, weight gain difference 2.6 kg, 95% CI 0.8–4.4 kg). The difference in BMI between pregnancies was +0.3 kg/m² in those with gestational diabetes and +1.4 kg/m² in control subjects ($P = 0.005$, BMI gain difference –1.1 kg/m², 95% CI 0.3–1.7). There was no difference when matched for parity ($P = 0.172$); this, however, included 55 patients with gestational diabetes with incomplete parity data, perhaps introducing some error in comparing the two groups. Overall, the results suggest there is a significant difference in limiting weight gain when an intervention is aimed at women with gestational diabetes pregnancies. The recurrence rate of gestational diabetes in the second pregnancies of those with gestational diabetes was 49/80 (61%); similar to a previous report from our region [8]. Table 1 summarizes the logistic regression, which confirms that the factors listed are not confounders to this difference. Individual parts of the intervention cannot be isolated in being associated with weight loss; however, we suggest that, together, the intervention is effective.

The data demonstrate that a management programme for gestational diabetes during pregnancy can have a legacy effect that limits weight gain for up to 2 years after delivery. A gestational diabetes pregnancy affords an excellent opportunity to modify diet and lifestyle factors, to reduce a woman's long-term risk of recurrent gestational diabetes or Type 2 diabetes. It is important that we recognize this long-term benefit and make it an explicit goal within all gestational diabetes management programmes.

Table 1 Linear regression model for factors associated with weight gain

Factors	Unstandardized coefficient (95% CI)	P-value
Family history of diabetes (diabetes vs. no diabetes)	1.313 (–1.563 to 4.19)	0.371
Maternal smoking (smokers vs. non-smokers)	0.685 (–0.280 to 1.649)	0.164
Time between pregnancies	0.015 (–0.057 to 0.088)	0.679
Time between gestational age	0.201 (–0.089 to 0.491)	0.174

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Competing interests

None declared.

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References

- 1 Callaway LK, Prins JB, Chang AM, McIntyre HD. The prevalence and impact of overweight and obesity in an Australian obstetric population. *Med J Aust* 2006; 184: 56–59.
- 2 Kim C, Newton KM, Knopp RH. Gestational diabetes and the incidence of type 2 diabetes: a systematic review. *Diabetes Care* 2002; 25: 1862–1868.
- 3 Bellamy L, Casas J-P, Hingorani AD, Williams D. Type 2 diabetes mellitus after gestational diabetes: a systematic review and meta-analysis. *Lancet* 2009; 373: 1773–1779.
- 4 Lee AJ, Walker SP, Hiscock RJ, Permezel M, Wein P. Gestational diabetes mellitus: clinical predictors and long-term risk of developing type 2 diabetes. *Diabetes Care* 2007; 30: 878–883.
- 5 Whiteman VE, Aliyu MH, August EM, McIntosh C, Duan J, Alio AP *et al.* Changes in pre-pregnancy body mass index between pregnancies and risk of gestational and type 2 diabetes. *Arch Gynecol Obstet* 2011; 248: 235–240.
- 6 Ehrlich SF, Hedderson MM, Feng J, Davenport ER, Gunderson EP, Ferrara A. Change in body mass index between pregnancies and the risk of gestational diabetes in second pregnancy. *Obs Gynecol* 2011; 117: 1323–1330.
- 7 Hoffman L, Nolan C, Wilson JD, Oats JJN, Simmons D. Gestational diabetes mellitus – management guidelines. *Med J Aust* 1998; 169: 93–97.
- 8 Foster-Powell KA, Cheung NW. Recurrence of gestational diabetes. *Aust N Z J Obstet Gynaecol* 1998; 38: 384–387.

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Response to Lie *et al.* Preventing Type 2 diabetes after gestational diabetes: women's experiences and implications for diabetes prevention interventions

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We read with interest the recently published original article by Lie *et al.* [1]. The authors explored the factors influencing post-natal health behaviours following the experience of gestational diabetes, and elicited women's views about the

feasibility of lifestyle intervention to prevent diabetes during the first 2 years after childbirth. Here, we discuss the key issues further.

First, there was poor response to post-partum screening. The uptake was 70% approximately 6 weeks after delivery and 30% at 1 year thereafter. The post-partum screening rate is reported to be low even in other parts of world, varying from 14% in usual care to 60% in a randomized controlled study [2]. In a randomized controlled trial by Clark *et al.* in 234 women with gestational diabetes, postal reminders were sent to physicians and patients 6 weeks to 1 year after delivery. In the group where no postal reminder was sent, the response rate was only 14.3%. The response rate was 55.3 and 51.6% in the groups where postal reminders were sent to patients and doctors, respectively. Where both patient as well as doctor received the postal reminders, the response rate was 60.5% [3]. The trial by Clark *et al.* has highlighted the importance of reminders to both patients and their physicians.

From our point of view, if such practice can be integrated with recommendations by various organizations [for example, the American Diabetes Association recommends screening for diabetes at 6–12 weeks post-partum, every 3 years thereafter, but annually in women with pre-diabetes, using non-pregnant (oral glucose tolerance test) criteria] [4], this can increase the patient participation rate. Coupled with this, every contact with the patient can be utilized as an opportunity to promote a healthy lifestyle for the woman, her offspring and, at no harm or extra cost, for her family.

The second important aspect is the change in attitude towards healthy lifestyle measures among women with gestational diabetes after delivery. Apart from the barriers observed by the authors, additionally seen in developing countries such as India are: distance from hospital; poor socio-economic conditions of the patient; pressure of household work; coming alone for testing; lack of adequate family support for childcare; inability of working women to come for screening on a working day. All these factors negatively impact on the post-partum screening response. Therefore, policies that also take these factors into account—especially in developing nations working towards and implementing a post-partum screening programme—could increase the success rate. Success in a post-partum screening programme translates into additional opportunities for promoting health. This would then translate into a reduced diabetes burden around the globe.

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