

Barriers to addressing overweight and obesity before conception

Leonie K Callaway, Michael J O'Callaghan and H David McIntyre

Overweight and obesity are major modifiable risk factors for adverse pregnancy outcomes.¹ Maternal obesity is the most common clinical risk factor for the development of high-risk and complicated pregnancies.²⁻¹¹

In line with the general population age- and sex-adjusted prevalence,¹² about one-third of pregnant women in Australia are overweight or obese.⁴ Weight loss in non-pregnant overweight and obese adults is associated with positive health outcomes and has been widely endorsed.^{13,14} Furthermore, pregnancy outcomes can be improved by prepregnancy weight loss.^{15,16}

Recent recommendations to improve preconception care have emphasised the importance of addressing overweight and obesity in women of childbearing age and, particularly, at prepregnancy health checks.¹

Although maternal obesity is a major public health issue in Australia, to our knowledge there are no data regarding current preconception care practice that can be used to inform the development of high-quality preconception care for overweight and obese women. Our study was designed to investigate the issues that confront women when addressing overweight and obesity before conception, by assessing preconception health care, pregnancy planning, self-perception of body mass index (BMI), weight loss attempts before pregnancy, receipt of weight loss advice before pregnancy and self-reported weight loss before pregnancy.

METHODS

Participants

Over a 6-week period during February–March 2006, we approached consecutive unselected women in early pregnancy who attended a public, antenatal “first visit” clinic at a major urban obstetric hospital in Brisbane or presented to a private obstetrician in Brisbane for a routine ultrasound scan and invited them to participate in a study on preconception health care.

Questionnaire development

The questionnaire was reviewed by 10 experts (obstetricians, obstetric physicians, paediatricians, sociologists and midwives)

ABSTRACT

Objective: To investigate the issues that confront women when addressing overweight and obesity before conception.

Design: Questionnaire-based study of 412 unselected women in early pregnancy.

Setting and participants: 255 women who attended a public, antenatal “first visit” clinic at a major urban obstetric hospital in Brisbane and 157 women who presented to a private obstetrician in Brisbane for a routine ultrasound scan during a 6-week period in 2006 were surveyed.

Main outcome measures: Preconception health activities, prepregnancy body mass index (BMI), self-reported weight category, attempts to lose weight before pregnancy, and weight loss advice received before pregnancy.

Results: Folic acid supplementation was reported by 56% of participants, and 53% attended a preconception health check. Of women who provided details of height and prepregnancy weight, 30% were overweight or obese before pregnancy. However, 23 of 65 women with a BMI in the overweight range categorised themselves as normal weight (36%), and only 8 of 50 women with a BMI in the obese range categorised themselves as obese (16%). As BMI increased, more women reported trying to lose weight ($P < 0.001$) and reported receiving advice regarding weight loss ($P < 0.001$). Prepregnancy weight loss was reported by 52 of 115 overweight and obese women (45%).

Conclusions: Potential barriers to addressing overweight and obesity before pregnancy include poor uptake of routine prepregnancy health activities, inaccurate self-categorisation of weight, unsuccessful weight loss attempts and inadequate advice regarding prepregnancy weight loss.

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to ensure face and content validity, and piloted to ensure concurrent validity. Test-retest reliability was assessed by administering the questionnaire to 12 women on two occasions, 1 week apart. No statistically significant differences in results were detected (Pearson's correlation coefficients, 0.7–1.0).

Survey questions and data collection

Survey questions included:

- Do you think that you are very underweight, underweight, normal weight, overweight or obese?
- Before this pregnancy, did you try to lose weight?
- Before this pregnancy, did you actually lose weight?
- Before this pregnancy, did anyone advise you to lose weight?

If weight loss advice had been provided, details of the source were sought.

BMI was calculated using self-reported height and self-reported prepregnancy weight. In pregnancy, self-reported height and

weight have been shown to have a very high correlation with measured height and weight.¹⁷ BMI was categorised according to World Health Organization classification: $< 18.50 \text{ kg/m}^2$, underweight; $18.50\text{--}24.99 \text{ kg/m}^2$, normal weight; $25.00\text{--}29.99 \text{ kg/m}^2$, overweight; and $\geq 30.00 \text{ kg/m}^2$, obese.

Statistical analysis

Continuous variables were compared using the Student's t test, and categorical variables were compared using the χ^2 test or Fisher's exact test, as appropriate. All tests were two-tailed, and significance was accepted at the 5% level. Analysis was conducted using Stata 10 (Stata Corp, College Station, Tex, USA).

Ethics approval

The study was approved by the Royal Brisbane and Women's Hospital Human Research Ethics Committee. Approval did not allow collection of information regarding women who did not consent to participate in the study.

1 Characteristics of women in early pregnancy who participated in a study on preconception care (n=412)

	No. (%) [*]
Mean age, years (SD)	31.4 (5.4)
Mean gestation, weeks (SD)	19.5 (6.2)
Mean prepregnancy BMI [†] , kg/m ² (SD) (n = 380)	23.8 (5.4)
Prepregnancy weight category (SD) (n = 380)	
Underweight [‡]	32 (8%)
Normal weight [‡]	233 (61%)
Overweight [‡]	65 (17%)
Obese [‡]	50 (13%)
Recruited from public antenatal clinic	255 (62%)
Median gravidity (IQR)	1.0 (0–1.0)
Median parity (IQR)	1.0 (0–1.0)
Nulliparous	179 (43%)
Planned pregnancy	266 (65%)
Folic acid supplementation before pregnancy	232 (56%)
Preconception health check	220 (53%)
Completed secondary school	300 (73%)
Tertiary degree	144 (35%)
Born in Australia	310 (75%)
Smoked during pregnancy	91 (22%)

^{*} Data are number (%) unless otherwise indicated.

[†] BMI values were calculated from self-reported height and self-reported prepregnancy weight.

[‡] Weight category according to World Health Organization BMI classification (< 18.50 kg/m², underweight; 18.50–24.99 kg/m², normal weight; 25.00–29.99 kg/m², overweight; ≥ 30.00 kg/m², obese). BMI = body mass index. IQR = interquartile range. ◆

RESULTS

Of 512 women approached for the study, 412 agreed to participate (consent rate, 80%); 255 participants were recruited from the public antenatal clinic (62%) (Box 1) and 157 were recruited when they presented to a private obstetrician for a routine ultrasound scan (38%). Three hundred and eighty participants provided details of height and prepregnancy weight (92%), from which prepregnancy BMI was calculated; of these women, 115 were categorised as overweight or obese before pregnancy (30%) (Box 1). Other participant characteristics, including factors related to preconception health care and demographics, are shown in Box 1. Of women recruited from the public clinic, 43 were obese (17%), and of those recruited from the private sector, 12

were obese (8%) ($P=0.013$). Self-reported weight categories according to prepregnancy BMI are shown in Box 2.

A total of 44 women were advised to lose weight before pregnancy. Of these women, 34 reported receiving this advice from a doctor (77%), 30 from their mother (68%), 20 from their partner (45%), 17 from friends (39%) and 13 from other family members (30%). For women who were normal weight, overweight or obese before pregnancy, data on self-reported weight loss attempts, actual weight loss, receipt of weight loss advice and preconception health check attendance are shown in Box 3. Of the 115 women who were overweight or obese before pregnancy, 65 sought a preconception health check from a doctor (57%). Of the 26 overweight women who reported visiting a doctor, six reported being advised to lose weight (23%). Of the 39 obese women who reported visiting a doctor, 14 recalled being advised to lose weight (36%). Thirty women in the study required assisted reproductive techniques; 13 of these women were overweight or obese, of whom six reported being advised to lose weight.

Advice to lose weight appeared unrelated to actual weight loss in overweight and obese women. Of 30 overweight or obese women who reported receiving advice on weight loss, 16 reported actual weight loss (53%), and actual weight loss was reported by 36 of 85 overweight or obese women who did not report receiving such advice (42%) ($P=0.29$). Similarly, there was no increase in self-reported weight loss in those women who reported that they were advised to lose weight by a doctor: 12 of 20 overweight or obese women who were advised by a doctor to lose weight reported actual weight loss (60%), and actual weight loss was reported by 40 of 95 overweight or obese women who did not receive such advice (42%) ($P=0.14$).

DISCUSSION

We identified several issues that need to be addressed to improve preconception health care for overweight and obese women. These include poor uptake of routine prepregnancy health activities, inaccurate self-categorisation of weight, unsuccessful weight loss attempts and inadequate advice regarding prepregnancy weight loss.

With only 53% of study participants reporting a preconception health check and 65% reporting a planned pregnancy, there is

2 Self-reported weight categories according to prepregnancy BMI* for women in early pregnancy who provided details of height and prepregnancy weight (n = 380)

Self-reported weight category	No. (%)
BMI < 18.50 kg/m² (n = 32)	
Underweight	12 (38%)
Normal weight	20 (63%)
BMI 18.50–24.99 kg/m² (n = 233)	
Underweight	9 (4%)
Normal weight	208 (89%)
Overweight	16 (7%)
BMI 25.00–29.99 kg/m² (n = 65)	
Normal weight	23 (35%)
Overweight	41 (63%)
Obese	1 (2%)
BMI ≥ 30.00 kg/m² (n = 50)	
Normal weight	4 (8%)
Overweight	38 (76%)
Obese	8 (16%)

* BMI values were calculated from self-reported height and self-reported prepregnancy weight, and BMI ranges correspond to those used for World Health Organization BMI classification (< 18.50 kg/m², underweight; 18.50–24.99 kg/m², normal weight; 25.00–29.99 kg/m², overweight; ≥ 30.00 kg/m², obese). BMI = body mass index. ◆

room for improvement on both these fronts. Consistent with other studies,^{18–20} uptake of periconceptual folic acid supplementation by our study participants (56%) was poor. This suggests that the complex lifestyle changes required for weight loss before pregnancy are likely to be difficult to achieve.

Of women with a BMI in the overweight range, 36% categorised themselves as normal weight, and 84% of women with a BMI in the obese range reported being normal weight or overweight. This inaccurate weight categorisation shows that women might not appreciate how overweight or obese they are. This may result in women having an inaccurate picture of the potential risk that their weight adds to a future pregnancy.^{2,21,22} It is also possible that obesity is now so common that it is perceived as normal. Our findings highlight the importance of calculating BMI and advising women about the increased risk of adverse pregnancy outcomes associated with overweight and obesity when they present for preconception care, as well as encouraging them to adopt healthier lifestyles to lose weight.

3 Self-reported weight loss attempts, actual weight loss, receipt of weight loss advice and preconception health check attendance for women who were normal weight, overweight or obese before pregnancy (n = 348)

	Normal weight* (n = 233)	Overweight* (n = 65)	Obese* (n = 50)	P†
Tried to lose weight before pregnancy	57 (24%)	32 (49%)	32 (64%)	<0.001
Actually lost weight before pregnancy	70 (30%)	29 (45%)	23 (46%)	0.02
Advised to lose weight before pregnancy (any source)	7 (3%)	9 (14%)	21 (42%)	<0.001
Preconception health check with doctor	121 (52%)	26 (40%)	39 (78%)	0.50
Advised to lose weight before pregnancy by doctor	7 (3%)	6 (9%)	14 (28%)	<0.001

*Weight category according to World Health Organization body mass index classification (18.50–24.99 kg/m², normal weight; 25.00–29.99 kg/m², overweight; ≥ 30.00 kg/m², obese), self-reported height, and self-reported prepregnancy weight. † P values indicate comparison across the three weight categories. ◆

Our study showed that weight loss attempts were more common with increasing BMI; 56% of overweight and obese women had attempted weight loss before pregnancy, and 45% reported losing weight.

Twenty-six per cent of overweight and obese women reported being provided with advice to lose weight, and a variety of sources were identified, including friends and family. This suggests that accurate and widely available information regarding the risks of overweight and obesity before pregnancy are needed to ensure that consistent messages are received.

Despite 57% of overweight and obese women having a preconception health check with a doctor, only 17% reported being advised by a doctor to lose weight. It is possible that women simply do not recall being provided with this advice — in this case, it is unlikely that they would have acted on any recommendations their doctor made about lifestyle changes before pregnancy. Alternatively, it may be that doctors who see women for preconception health checks are not aware of the importance of overweight and obesity as a risk factor in pregnancy, and therefore do not calculate BMI or provide targeted lifestyle advice. This requires further investigation.

Also, although provision of advice to lose weight by a doctor was not associated with an increase in self-reported weight loss, the sample size used for this analysis was small. Hence the potential benefit of brief advice provided by a doctor during a preconception health check warrants further investigation with an adequately powered prospective study.

Our study sampled women from an urban area with a broad spectrum of socioeconomic backgrounds. The proportion of

participants recruited from the public sector (62%) is comparable to the 63% of women who received maternity care in the public sector in Queensland in 2004–2005.²³ Our data on educational status showed that 35% of study participants had completed a tertiary degree, and only 27% had not completed secondary school. For comparison, 29% of Australian women who were aged 25–44 years in 2005 had completed tertiary education, and 27% had not completed secondary school.²⁴ Thus, educational status was slightly higher in our sample but this is unlikely to be a major source of bias. However, we expect that if this survey was conducted in a rural environment, or with less well educated sample participants, the results may be notably different.

This study highlights several potential barriers to addressing overweight and obesity before conception, and provides information that could be used to develop a preconception approach to overweight and obesity. Although long-term weight loss and weight maintenance is very difficult to achieve, short-term weight loss is achievable.²⁵ The short-term goal of a healthy pregnancy and healthy baby may provide a window of opportunity for lifestyle intervention. Further research is required to establish the best way to support women in the preconception phase to help them enter pregnancy at an optimal weight.

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COMPETING INTERESTS

None identified.

AUTHOR DETAILS

Leonie K Callaway, MB BS(Hons), FRACP, PhD, Obstetric and General Physician,¹ and Associate Professor and Head²

Michael J O'Callaghan, FRACP, Paediatrician³
H David McIntyre, FRACP, Professor and Head,⁴ and Director of Obstetric Medicine⁵

¹ Royal Brisbane and Women's Hospital, Brisbane, QLD.

² Royal Brisbane Clinical School, School of Medicine, The University of Queensland, Brisbane, QLD.

³ Mater Children's Hospital, Brisbane, QLD.

⁴ Mater Clinical School, School of Medicine, The University of Queensland, Brisbane, QLD.

⁵ Departments of Endocrinology and Obstetric Medicine, Mater Health Services, Brisbane, QLD.

Correspondence: l.callaway@uq.edu.au

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