



Pregnancy care and birth outcomes for women with moderate to super-extreme obesity



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ABSTRACT

Purpose: To describe the health service utilisation and birth outcomes of pregnant women with moderate to super-extreme obesity.

Background: Maternal obesity is increasingly recognised as a key risk factor for adverse outcomes for both women and their babies. Little is known about the service utilisation and perinatal outcomes of women with obesity beyond a body mass index of 40.

Method: Women with a self-reported pre-pregnancy BMI of 40 or more, who had received care and birthed a baby at the study site between 1 January 2009 and 31 December 2010. Clinical audit was used to identify the health service utilisation and birth outcomes of these women.

Results: 153 women had a BMI of 40 or more. Women saw 6 different health professionals during pregnancy (1–16). Most of their visits were with a medical practitioner, often with limited experience, and almost all women only saw a midwife once at their booking visit ($n = 150, 98.0\%$). While the majority of women experienced a normal pregnancy, free from any complications, almost half the women in this study experienced a caesarean section ($n = 74, 48.4\%$).

Conclusion: Clinical audit has been useful in providing additional information which suggests current maternity care provision is not meeting the needs of this group of women. The model of antenatal care provision may be a mediating factor in the birth outcomes experienced by obese women. The development of effective, targeted antenatal care, designed to meet the needs of these women is recommended.

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1. Introduction

Obesity, defined as a body mass index (BMI) of 30 kg/m^2 or more is a global public health problem in developed nations. Almost a decade ago the World Health Organisation (WHO) reported that obesity had reached epidemic proportions, with more than one billion adults overweight; at least 300 million of them clinically obese.¹ Obesity is a major contributor to the global burden of chronic disease and disability due to an association with co-morbidities including type two diabetes, cardiovascular disease and stroke.¹

Obesity in childbearing women is increasingly recognised as a key risk factor for adverse outcomes for both women and their babies.² Pregnancy related complications include increased risk of

gestational diabetes, hypertensive disease, thromboembolism, stillbirth, induction of labour (IOL) and caesarean section (CS).

As a result of the obesity epidemic in the childbearing population, maternity systems and care providers are under increasing pressure to provide additional resources to accommodate the range of complications that arise from maternal obesity. Adding to the challenge of planning and providing quality services is the increasing number of women in the extremely obese category (defined as $\text{BMI} \geq 40$).^{3,4} There remains little evidence about the prevalence and outcomes for women with a BMI beyond 40 largely because perinatal data collections generally group all women with either a BMI over 30 or 40 together. As such there is limited understanding of the health service needs of this group of childbearing women. There is however emerging work describing the prevalence and outcomes of women with a new class of obesity, termed by some, super obese, morbid obese or extremely obese, defined as BMI greater or equal to 50.^{4–6} Since there is currently no standard agreed terms to describe subgroups beyond BMI 40, this paper will define the subgroups as moderately obese

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(BMI 40–44), extremely obese (BMI 45–49) and super extremely obese (BMI ≥ 50).

2. Aim

This study sought to identify the service utilisation and perinatal outcomes of moderate to super-extremely obese women (defined as BMI 40 or more) accessing care at a South East Queensland maternity unit. In this paper a proportion of the results are reported relating to the following study objectives:

- Describe the health service use of women with moderate to super-extreme obesity;
- Describe the birth outcomes of women with moderate to super-extreme obesity; and
- Explore the relationships between demographic, pregnancy and birth factors which result in health disparities for women with moderate to super-extreme obesity compared with normal weight women.

2.1. Ethical considerations

Ethical approval to conduct this study was granted by the Hospital District Human Research Ethics Committee (HREC) and Griffith University HREC.

3. Methodology

The study was conducted at a maternity unit in South East Queensland, Australia with approximately 3500 births per year.⁷ The unit manages women with low, medium and selected high risk pregnancies.⁸ Midwife-led antenatal care is offered to women with no medical or obstetric complications. Specialist care is provided to women who have identified risk factors or who develop complications including women with a high BMI. Caseload midwifery care is provided to a small number of women who, at booking, are assessed to meet category A of the Australian College of Midwives National Guidelines for Consultation and Referral.⁹

3.1. Sample

The primary target population was pregnant women with a self-reported pre-pregnancy BMI of 40 or more who birthed at the study site between 1 January 2009 and 31 December 2010.

3.2. Data collection

Participants were identified from data collated by the Queensland Health, Health Statistics Centre. Data are collected by every maternity unit via the Queensland Perinatal Data Collection (PDC) form. This is a mandatory document which is completed for all women giving birth.¹⁰ This document records demographic, reproductive, antenatal, intrapartum and postnatal information for both the woman and her newborn infant. Once ethical approval was received a request was made to extract the relevant data set. Variables included the development of disorders such as hypertensive disorders, diabetes and thromboembolism. Intrapartum variables included outcomes such as IOL, epidural use, operative birth rate and maternal complications. Neonatal outcomes included Apgar score, birth weight, gestation at birth, and admission to special care nursery (SCN). The Health Statistics Unit identified 163 women with a pre-pregnancy BMI of 40 or more.

3.2.1. Chart audit

An audit tool was developed using the latest recommendations from a variety of current clinical practice guidelines.^{11–13} The audit

tool included a total of 235 data points. Pregnancy outcomes collected in this way included model of care, number of appointments, personnel seen, admissions, pathology, investigations and breastfeeding rates after birth and at discharge. Data were collected from the initial pregnancy booking to discharge from the maternity service.

4. Data analysis

Data was entered into an SPSS (Statistical Package for the Social Sciences) database version 19. Descriptive statistics were initially used to describe and synthesise the data. Inferential statistics were subsequently used to make inferences about the population. Relationships between categorical variables were examined using chi-square analyses, between continuous variables using Pearson's product moment correlation test and for relationship between continuous and categorical variables using one-way ANOVA. Logistic regression was used to report maximum likelihood. An alpha level of 0.05 was used for all statistical tests.

Outcome measures were defined according to the definitions within the literature. Women were classified into three separate BMI groups: moderate obese (BMI 40–44), extremely obese (BMI 45–49) and super extremely obese (BMI ≥ 50).

5. Results

Between 2009 and 2010, 6995 women birthed at the study site. Of these, 163 women were initially identified as having a BMI of 40 or more.⁷ However on further examination two women were noted as having a BMI less than 40 and were therefore excluded. Furthermore, eight women were identified as not booked at the study site and were excluded as we were interested in exploring service use. This left a study sample of 153 women.

Almost 33% ($n = 50$) of the sample was women having a first baby. The sample is further described in Table 1.

5.1. Health service utilisation

5.1.1. Model of care and antenatal appointments

Almost 66% ($n = 100$) of women received shared antenatal care between a hospital specialist and a General Practitioner (GP). The remaining women received hospital obstetric services only ($n = 48$, 31.4%) with a small minority of women accessing midwife-led care at some point during their pregnancy ($n = 5$, 3.3%). The majority of women attended the specialist outpatient clinic at some time during their pregnancy ($n = 144$, 94.0%).

On average, women booked to hospital at 17.0 weeks gestation (5–38), attended 11 (1–21) antenatal appointments (see Table 2) and saw 6 (1–16) different health care professionals. During hospital antenatal visits the majority of women ($n = 130$, 84.5%) were attended by junior medical staff (resident or intern) and most women only had one visit with a senior doctor (registrar or above) ($n = 113$, 73.0%). A small minority of women were seen by specialist obstetric consultants ($n = 27$, 14.9%). With the exception of three women, study participants only saw a midwife at their booking visit ($n = 150$, 98.0%).

Almost half the women ($n = 74$, 45.9%) did not attend at least one scheduled antenatal appointment compared with a failure to attend scheduled antenatal clinic appointment rate of 10.8% for all antenatal appointments during the study period.¹⁴

BMI was documented in little over half the women's medical charts ($n = 89$, 58.2%).

5.1.2. Antenatal hospital admissions

One third of women ($n = 49$, 32%) were admitted to hospital during the antenatal period. The majority of women were

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