Pregnancy outcomes in super-obese women – an even bigger problem? A prospective cohort study

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Objective. To investigate whether differences exist in adverse pregnancy outcomes between morbidly obese (body mass index (BMI, kg/m²) 40 - 49.9) and super-obese women (BMI ≥50).
Methods. A prospective cohort study was undertaken at Tygerberg Hospital, a referral centre in the Western Cape Province of South Africa, of morbidly obese and super-obese pregnant women recruited from the antenatal clinic. Data were collected from the files 6 weeks after delivery. Primary outcomes included hypertension, diabetes mellitus and fetal macrosomia. Secondary outcomes included baseline characteristics, previous complications, antenatal and peripartum complications, and short-term neonatal outcomes.
Results. Sixty-six morbidly obese and 46 super-obese women were enrolled. Super-obese women experienced significantly higher incidences of pre-eclampsia (24% v. 9%; p=0.03) and interuterine growth restriction (13% v. 2%; p=0.02) than morbidly obese women, and both groups had a high incidence of gestational diabetes (24% v. 24%; non-significant (NS)). Both super-obese and morbidly obese women experienced high rates of caesarean section (54% v. 41%; NS). In super-obese women these procedures lasted longer (50 v. 41 minutes; p<0.01) and there were more surgical complications (36% v. 7%; p=0.01). Prolonged admission (>3 days) after delivery was also more common in super-obese women (65% v. 42%; p=0.03).
Conclusion. Super-obese women encounter more major pregnancy complications (especially hypertensive, pre-eclamptic and surgical) than morbidly obese women, emphasising the fact that these women should be managed at institutions with sufficient expertise.

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In 2008, the World Health Organization released a media statement that highlighted the 'double burden' of disease in low- and middle-income countries that 'continue to deal with the problems of infectious disease and under-nutrition' while 'at the same time they are experiencing a rapid upsurge in chronic disease risk factors such as obesity and overweight, particularly in urban settings'.[1]

Obesity has been directly linked to adverse (and at times severe) maternal and perinatal outcomes.[2-5] These outcomes have also been illustrated in the South African (SA) population.[6] Furthermore, obesity is a growing problem across the world and the lifestyle accompanying it is associated with a wide spectrum of medical problems such as hypertension, diabetes and cardiovascular disease.[7] Obesity does not only result in short- and long-term complications for the adult woman, but may also lead to adverse outcomes in her offspring.[8] Obesity in SA follows the same trend as in the rest of the world, with more than a third of all women being reported as obese.[9,10]

Super-obesity (body mass index (BMI, kg/m²) ≥50) poses a unique challenge to the obstetrician and places a large burden on the healthcare environment. Earlier case reports[11] and recently two large observation series[12,13] have described the increasing difficulty in managing these pregnant women. In 2009 the Committee on Nutritional Status During Pregnancy and Lactation of the Institute of Medicine instituted a guideline on recommendations for weight gain during pregnancy but only had categories for overweight (BMI 25 - 29.9) and obese (BMI ≥30) women.[14] They did not categorise morbid obesity (BMI ≥40) or super-obesity (BMI ≥50) separately.

A systematic review of 35 studies published between 1990 and 2007 was conducted on the effect of weight gain in pregnancy. Almost all sourced studies were observational in design, with no standardisation of definitions, methodology, statistical analysis of outcomes and long-term follow-up. The data were therefore regarded as insufficient to make clear clinical recommendations, although the evidence did show some associations between weight gain and pregnancy outcomes.[15]

Currently in the Western Cape Province of SA, the provincial protocols use a BMI ≥40 as a marker for referral to a higher level of care. However, no clear recommendations exist on weight gain during pregnancy and there are no specific guidelines for the management of obesity in pregnancy in SA. The question arises whether there are distinct differences between the pregnancy outcomes of morbidly obese and super-obese women and whether these two groups should be managed as separate entities. It may be argued that certain precautions such as more frequent follow-up and more intense monitoring of these patients might improve outcome, or at least prevent complications. The aim of this study was to investigate whether distinct differences, such as the prevalence of gestational hypertension, pre-eclampsia, gestational diabetes

mellitus (GDM) and fetal macrosomia, exist between morbidly obese (BMI 40 - 49.9) and super-obese pregnant women (BMI ≥50).

Methods

This prospective cohort study was performed at Tygerberg Hospital, a secondary and tertiary referral centre in the Western Cape. Tygerberg Hospital serves as the referral centre for all morbidly obese pregnant women within the region. The study population consisted of women with a BMI ≥40. These women were recruited in the high-risk antenatal clinic where written informed consent was taken before enrolment. Recruitment was not continuous but subject to the availability of the principal investigator. Data were then collected from the files by the principal author, 6 weeks after completion of the pregnancy. The primary outcomes were gestational hypertension, pre-eclampsia, GDM and fetal macrosomia. Secondary outcomes included baseline characteristics, previous pregnancy complications, antenatal complications (e.g. preterm labour, preterm prelabour rupture of membranes, antepartum haemorrhage, etc.), intrapartum complications, caesarean deliveries, duration of labour, intrapartum blood loss, birth weights, Apgar scores, postpartum complications and length of hospital stay.

The following definitions were used:

- **Hypertension.** Systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg, two consecutive measurements at least 4 hours apart
- **Chronic hypertension.** Pre-gestational hypertension or onset before 20 weeks' gestation
- **Gestational hypertension.** Onset of hypertension after 20 weeks' gestation
- **Pre-eclampsia.** Onset of hypertension after 20 weeks' gestation plus proteinuria (persistent ≥1+ on dipstick or ≥300 mg/24 h)
- **Superimposed pre-eclampsia.** Development of pre-eclampsia in a patient with known chronic hypertension
- **Eclampsia.** Generalised convulsions associated with hypertension and proteinuria in pregnancy
- **Macrosomia.** Birth weight ≥4 000 g
- **Intrauterine growth restriction (IUGR).** Estimated fetal weight below the 10th centile for gestational age
- **Preterm labour:** Onset of labour from 26 weeks 0 days but before 37 weeks 0 days
- **GDM.** A fasting glucose level ≥5.6 mmol/L or a 2-hour postprandial glucose level ≥7.8 mmol/L, in a previously non-diabetic patient
- **Puerperal infection.** Infection of the genital tract occurring any time from labour to the 42nd day after delivery, with ≥2 of the following: pelvic pain, oral temperature 38.5°C, vaginal discharge or pus draining, foul-smelling discharge, delayed uterine involution
- **Gestational proteinuria.** Persistent proteinuria on dipstick ≥1+ or a daily urine protein of ≥300 mg in the absence of hypertension measured after 20 weeks' gestation.

Blood pressure measurements were taken in a standardised manner with a mercury sphygmomanometer or an automated device using an appropriately sized (obese) cuff. The women were at rest, seated for 5 minutes or in the left lateral position with the cuff at the level of the heart. Diastolic blood pressure was measured at the 5th Korotkoff sound, which is the disappearance of the sounds. When the patients were admitted to a high-dependency unit, direct arterial pressures were measured using an invasive arterial line.

Statistical analyses were carried out comparing the morbidly obese and super-obese pregnant women. Statistical analysis was performed using Statistica 11 from Statsoft.com. Data are expressed as medians (ranges), means (standard deviation, SD) or *n* (%), as appropriate. Categorical data were analysed using the χ^2 test. Where an expected cell value was less than 5, Fisher's exact test was used. Continuous data were analysed with Student's *t*-test for parametric and Mann-Whitney *U*-test for non-parametric data. A *p*-value of <0.05 was regarded as significant.

The study was approved and registered by the Human Research and Ethics Committee of Stellenbosch University (N11-03-097).

Results

The study was conducted from 12 September 2011 to 26 February 2013, during which time a total of 66 morbidly obese and 46 super-obese women were enrolled. None of the women approached declined consent. Table 1 depicts the characteristics of the women at study entry. Pre-existing hypertension was more prevalent in the super-obese group (34.7%) than the morbidly obese group (21.2%) but this difference was not significant (p=0.16).

The overview of antenatal events and complications is reflected in Table 2. The incidence of pre-eclampsia was significantly higher in the super-obese group than in the morbidly obese group (23.9% v. 9.1%; p=0.03). In the super-obese group, 5 (10.8%) had early-onset pre-eclampsia compared with 2 (3.0%) in the morbidly obese group; the same trend was noted for late-onset pre-eclampsia (6 (13.0%) and 4 (6.0%), respectively). The incidence of gestational proteinuria was also higher in the super-obese than the morbidly obese group, being 4 (8.6%) and 2 (3.0%), respectively (p=0.22). When looking at obstetric complications, more super-obese patients had antepartum haemorrhage (3 (6.5%) v. 0), but this failed to reach statistical significance (p=0.07) and no other differences were shown between the two groups. There were no differences in the incidence of medical complications such as cystitis and pyelonephritis between the two groups. Suboptimal ultrasound views were noted during evaluations in 32 (69.6%) of the super-obese and 47 (71.2%) of the morbidly obese participants.

Fig. 1 depicts the indications for antenatal admissions. In the super-obese group, there were significantly more admissions for uncontrolled blood pressure (p=0.04).

During the antenatal period, 43 (93.4%) super-obese patients and 29 (43.9%) morbidly obese patients underwent assessment by an obstetric anaesthetist. The policy at Tygerberg Hospital is to refer all pregnant women with a BMI ≥45 for an obstetric anaesthetic evaluation. In the super-obese group, 2 women (4.4%) required a cardiology assessment and 2 (4.4%) a pulmonology assessment, while in the morbidly obese group these numbers were 2 (3.0%) and 4 (6.0%), respectively.

The intrapartum outcomes of the participants are depicted in Table 3. Indicated inductions were performed in 25 (37.9%) of the morbidly obese and 19 (41.3%) of the super-obese group (p=0.84). The most frequent indications for induction were hypertensive disorders (15 in the morbidly obese group v. 18 in the super-obese group; p=0.03) and diabetes (11 v. 6, respectively; p=0.79). As a method of induction, artificial rupture of the membranes was performed more frequently in the morbidly obese than the super-obese group (12 (48.0%) v. 2 (10.5%); p<0.01). Misoprostol was used more frequently in the super-obese group (12 (63.2%) v. 11 (44.0%); p=0.3), as was dinoprostone gel (5 (26.3%) v. 0; p=0.01).

Table 1. Patient characteristics at study entry

	BMI 40 - 49.9	BMI ≥50	*p*-value
Patients	66	46	
Age (yr), median (range)	32 (18 - 42)	33 (19 - 45)	-
BMI, median (range)	44.0 (40 - 49)	52.8 (50 - 71)	<0.01
Height (cm), median (range)	160 (142 - 175)	159 (136 - 172)	-
Weight (kg), median (range)	114 (89 - 144)	135 (111 - 193)	<0.01
Race, *n* (%)			
White	3 (4.5)	2 (4.4)	-
Coloured	47 (71.2)	28 (60.9)	-
Black	13 (19.7)	15 (32.6)	-
Unknown	3 (4.5)	1 (2.2)	
Gestational age at booking (wk), median (range)	13 (4 - 35)	13 (4 - 33)	-
Gestational age at enrolment (wk), median (range)	29 (9 - 40)	29 (10 - 40)	-
Gravidity, median (range)	3 (1 - 6)	3 (1 - 10)	-
Parity, median (range)	1 (0 - 4)	2 (0 - 9)	-
Pre-existing morbidity, *n* (%)			
Hypertension	14 (21.2)	16 (34.7)	-
Diabetes mellitus	2 (3.0)	0	-
Asthma	8 (12.1)	6 (13.0))	-
HIV	1 (1.5)	4 (8.7)	-
Smoking, *n* (%)	22 (33.3)	8 (17.3)	0.06
Alcohol use, *n* (%)	10 (15.1)	3 (6.5)	-
Previous obstetric history, *n* (%)			
Gestational hypertension	13 (19.6)	10 (21.7)	-
Pre-eclampsia	3 (4.5)	4 (8.7)	-
Gestational diabetes	1 (1.7)	0	-
Preterm labour/preterm rupture of membranes	5 (7.6)	0	0.056
Booking blood pressure (mmHg), median (range)			
Systolic	130 (100 - 160)	130 (100 - 160)	-
Diastolic	80 (50 - 110)	80 (58 - 110)	-
Booking proteinuria, *n* (%)	5 (7.6)	7 (15.2)	-

BMI = body mass index (kg/m²).

The surgical complications encountered in the morbidly obese group were one uterine tear and one operation with severe adhesions resulting in 1 000 ml blood loss. Surgical complications in the super-obese group comprised a uterine tear, a ureteric injury, a patient with severe haemorrhage due to difficult surgery and dense adhesions, a case requiring a B-lynch suture for an atonic uterus, and a hysterectomy for uncontrolled haemorrhage during caesarean section for a twin pregnancy. Four caesarean sections in the super-obese group lasted ≥90 minutes. The indications for the caesarean sections are depicted in Fig. 2, but none of these indications differed significantly.

Table 4 depicts the postpartum and neonatal outcomes. The four cases of puerperal sepsis in the super-obese group were due to pneumonias (2), cellulitis (1) and a surgical wound infection. One patient in the morbidly obese group had a caesarean wound infection. There was only one readmission after discharge in each group, the indication being blood pressure control.

Discussion

The chief findings of this study were as follows: super-obese pregnant women experienced significantly higher incidences of pre-eclampsia (23.9% v. 9.1%; p=0.03) and IUGR (13.0% v. 2.0%; p=0.02), but there was no difference in the incidence of GDM. Both super-obese and morbidly obese women experienced high rates of caesarean section (54.3% v. 40.9%; NS). In the former group, these procedures lasted significantly longer (50 v. 41 minutes; p<0.01) and there were more complications (36.0% v. 7.4%; p=0.01). Prolonged admission (>3 days) after delivery was also more common in super-obese women (65.2% v. 42.4%; p=0.03).

Gestational hypertension has repeatedly been shown to be associated with increased body mass.[3,12,13] In a large population-based cohort study, Robinson *et al.*[16] reviewed pregnancy outcomes stratified by pre-pregnancy weight, while comparing normal weight with overweight and severe obesity. They demonstrated a higher incidence of gestational hypertension (odds ratio (OR) 3.00; 95% confidence interval (CI) 2.49 - 3.62) in the severe obesity group. In contrast, a previous study performed in SA failed to show a difference in the incidence of gestational hypertension among groups with different BMI categories.[6] The index study demonstrated that in addition to a significantly higher incidence of pre-eclampsia, super-obese pregnant women had higher systolic (p<0.01) and diastolic values (p=0.02), leading to more antenatal admissions for uncontrolled blood pressure (p=0.04). In addition to hypertension generally, pre-eclampsia specifically has also been linked to obesity.[17] These findings could be explained by the chronic inflammation associated with obesity (further worsened in super-obesity) through the production of adipokines such as leptin and adiponectin in adipose tissue that lead to inflammation, insulin resistance and oxidative stress. These processes ultimately have a negative effect on the endothelium and cardiovascular system.[18]

On a practical note, correct technique when measuring the blood pressure is extremely important, especially in obese patients, since 'cuff hypertension' is a well-recognised phenomenon when measurements are taken with an inappropriately sized cuff.[19]

Obesity is a well-known and strong risk factor for gestational diabetes.[20] Schrauwers and Dekker[3] demonstrated a higher incidence of GDM in morbidly obese women than in those of normal

Table 2. Antenatal events and complications

	BMI 40 - 49.9	BMI ≥50	*p*-value
Hypertensive complications, *n* (%)	20 (30.3)	23 (50.0)	
Gestational hypertension, *n* (%)	14 (21.2)	12 (26.0)	-
Pre-eclampsia, *n* (%)	6 (9.1)	11 (23.9)	0.03
Highest* systolic (mmHg), median (range)	140 (100 - 190)	150 (120 - 190)	<0.01
Highest* diastolic (mmHg), median (range)	90 (70 - 130)	90 (80 - 120)	0.02
Gestational proteinuria, *n* (%)	2 (3.0)	4 (8.6)	
Gestational diabetes, *n* (%)	16 (24.2)	11 (23.9)	-
Fetal growth			
SF ≥90th centile, *n* (%)	44 (66.7)	28 (60.9)	-
SF ≤10th centile, *n* (%)	1 (1.5)	2 (4.3)	-
IUGR, *n* (%)	1 (1.5)	6 (13.0)	0.02
Macrosomia, *n* (%)	5 (7.6)	3 (6.5)	-
Total antenatal admission days†	3 (1 - 10)	4 (1 - 21)	-

BMI = body mass index (kg/m²); SF = symphysis-fundal height; IUGR = intrauterine growth restriction.
*'Highest' systolic or diastolic blood pressure refers to highest recorded reading during pregnancy and/or labour.
†Total number of days admitted in hospital during the pregnancy from conception to birth.

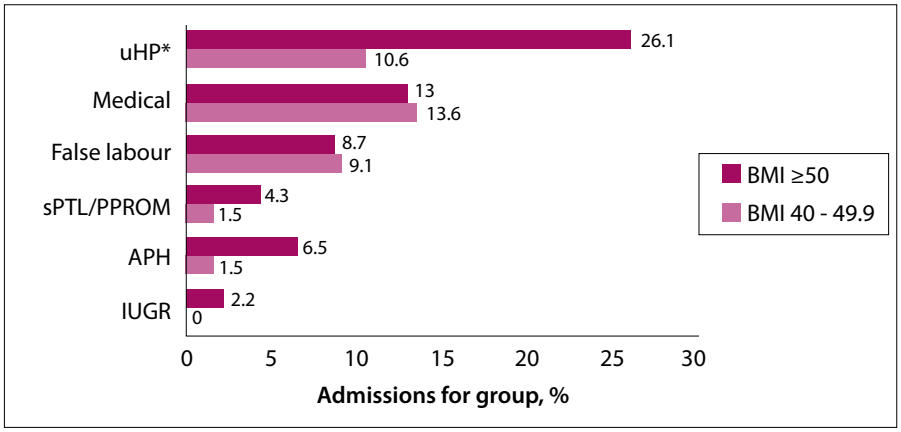

Fig. 1. Indications for antenatal admissions. (uHP = uncontrolled hypertensive disorders; Medical = medical disorders; sPTL = spontaneous preterm labour; PPROM = preterm prelabour rupture of membranes; APH = antepartum haemorrhage; IUGR = intrauterine growth restriction.)

weight (22% v. 1%; OR 16.3; 95% CI 3.6 - 74.5). Similarly, the index study illustrated a higher incidence of GDM in both groups (24%), although no significant differences were seen between the super-obese and morbidly obese groups. In comparison with a previous SA study on maternal obesity, which demonstrated an incidence of 5.1% in morbidly obese women,[6] the incidence of GDM in the index study is certainly high. This difference might be explained by the enrolment criteria.

Obesity has been linked to fetal overgrowth with ensuing maternal complications such as protracted or arrested labour, operative vaginal or caesarean deliveries, genital tract injuries and postpartum haemorrhage, as well as fetal complications that include shoulder dystocia, birth trauma and asphyxia.[13,21] Symphysis-fundal (SF) measurement is often used as a screening tool to evaluate the growth of the fetus, but is understandably inaccurate in obese and super-obese women. In the index study the great discrepancy between SF measurements plotted ≥90th centile, as well as the number of macrosomic babies born, illustrates this point. Fox *et al.*[22] highlighted the difficulty of clinical fetal weight estimation in women with increased BMI (≥30), while Goetzinger *et al.*[23] also demonstrated low detection rates of fetal growth abnormalities using clinical estimation across a wide spectrum of BMI categories. Although fetal macrosomia and obesity is a logical association, IUGR is often overlooked in these patients. Maternal obesity is a recognised risk for IUGR,[24] being associated with increased risks of perinatal mortality, birth adaptation complications, respiratory distress and necrotising enterocolitis.[25] In the index study the incidence of IUGR was greater (p=0.02) in the super-obese group. This is in contrast with a recent meta-analysis that indicated a decreased risk of low birth weight (relative risk 0.84; 95% CI 0.75 - 0.95) in overweight and obese women. The meta-analysis did show an increased risk of extremely low birth weight infants in the 'heavier' woman (for obese OR 1.43; 95% CI 1.05 - 1.95, and for 'very obese' OR 1.98; 95% CI 1.36 - 2.89).[26] Because of the unreliability of clinical methods of determining fetal growth in these women, it is advisable to test placental function using umbilical artery Doppler measurements, or perform serial fetal biometry if resources allow. This emphasises the fact that such women should be managed at institutions with sufficient expertise.

Recent publications have expressed concern regarding the number of medically indicated preterm deliveries in women from high BMI categories across all gestational ages, whereas the risk of spontaneous preterm birth was only increased in the extremely preterm deliveries.[27] In the index study, indicated preterm inductions were more frequent in the super-obese group, although statistical significance could not be reached, possibly because of the numbers in this study. Similarly, there were no differences in the incidences of spontaneous preterm labour or preterm prelabour rupture of membranes.

Obesity has been linked to high rates of caesarean section as well as intra- and postoperative complications.[13,28,29] It was even proposed that a 'dose-response' relationship exists between worsening obesity and caesarean delivery in a recent large population-based retrospective cohort study.[30] In the index study, caesarean sections in super-obese women took longer to perform (p<0.01) and were associated with more complications (p=0.01). At the study institution, patients who undergo caesarean section are routinely discharged on postoperative day 3. For this reason the number of discharges after day 3 was investigated. Significantly more women in the super-obese group had a prolonged

Table 3. Intrapartum outcomes

	BMI 40 - 49.9	BMI ≥50	*p*-value
Gestation at delivery (wk), median (range)	39 (22 - 42)	39 (28 - 42)	-
Inductions, *n* (%)	25 (37.9)	19 (41.3)	-
Term inductions (≥37 wk)	23 (92.0)	17 (89.4)	-
Preterm inductions (<37 wk)	2 (8.0)	2 (10.5)	-
Mode of delivery, *n* (%)			
Vaginal delivery	38 (57.6)	21 (45.6)	-
Breech delivery	1 (1.5)	0	-
CS	27 (40.9)	25 (54.3)	-
Elective CS	10	8	
Emergency CS	17	17	
Vaginal deliveries			
Augmentation of labour, *n* (%)	19 (50.0)	15 (71.4)	-
Epidural, *n* (%)	6 (15.7)	7 (33.3)	-
1st-stage duration (hh:mm), median (range)	07:05 (01:00 - 19:30)	04:50 (0:55 - 14:30)	0.03
2nd-stage duration (hh:mm), median (range)	00:10 (0:02 - 00:40)	00:10 (0:01 - 1:00)	-
Assisted deliveries, n (%)	1 (2.6)	1 (4.8)	-
Blood loss (ml), median (range)	200 (100 - 800)	200 (100 - 300)	-
Blood loss >500 ml, *n* (%)	2 (5.1)	2 (9.5)	-
Complications,* *n* (%)	6 (15.8)	5 (23.8)	-
CS			
Surgery time (hh:mm), median (range)	00:41 (00:23 - 01:26)	00:50 (00:20 - 02:25)	<0.01
Blood loss (ml), median (range)	500 (200 - 1 000)	500 (300 - 1 500)	-
Blood loss >750 ml, *n* (%)	4 (14.8)	6 (24.0)	-
Complications,† *n* (%)	2 (7.4)	9 (36.0)	0.01

BMI = body mass index (kg/m²); CS = caesarean section.
*Vaginal tears, retained placenta, postpartum haemorrhage.
†Uterine tears, ureteric injury, hysterectomy, B-lynch suture, surgery time ≥90 min.

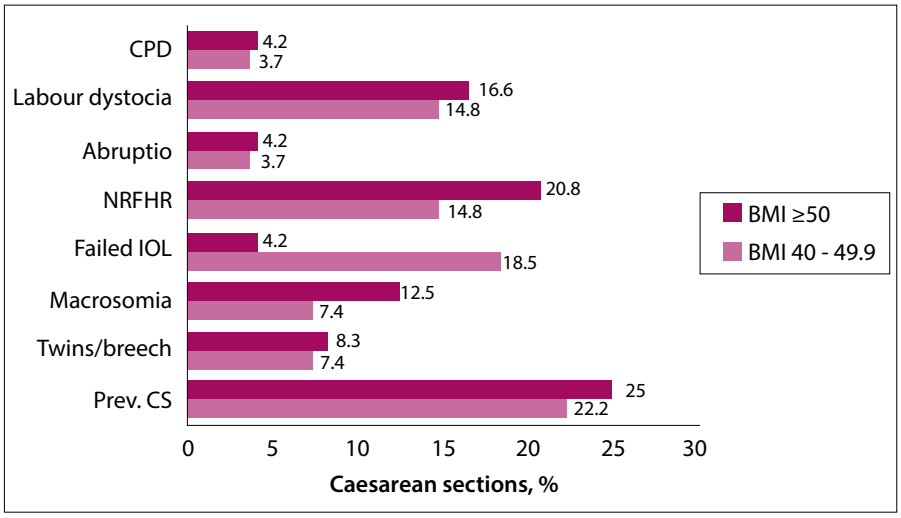

Fig. 2. Indications for caesarean sections. (CPD = cephalopelvic disproportion; NRFHR = non-reassuring fetal heart rate tracing; IOL = induction of labour; CS = caesarean section.)

hospital stay (p=0.03). The increased burden of intra- and postoperative challenges provides another reason for managing at least super-obese women at institutions providing a higher level of care. Although it may be desirable to manage all morbidly obese women at such institutions, the new pandemic of obesity in many countries of the world will overwhelm the capacity of most institutions to provide such care, hence the importance of BMI categorisation (as in this study) that can be used to guide health policy.

A paucity of information exists on the outcomes of super-obese pregnant women. While indications for, and rates of, caesarean section, as well as antibiotic use, have sometimes been discussed, particular surgical details are lacking. This study provides additional details such as duration, blood loss and specific complications of surgery. Limitations of this study include its relatively small size, as well as the lack of continuous enrolment. Only GDM is discussed, as women with pre-existing diabetes mellitus were treated in a separate specialist clinic. Furthermore, the records of nine women (7.4%) could not be obtained for inclusion into the study. This study should provide the stimulus for larger studies to identify risks and effective management strategies further in order to improve outcomes and inform provincial and national policies.

The obesity pandemic continues to challenge the health sector, with obstetrics being no exception. The findings of this study provide evidence to support the management of at least super-obese women at the level of referral institutions. Such facilities are able to perform appropriate special investigations and have the necessary expertise to provide safe care.

Finally, healthcare practitioners should be tireless in advocating a healthy lifestyle.

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Table 4. Postpartum and neonatal outcomes

	BMI 40 - 49.9	BMI ≥50	*p*-value
Hospital stay (days), median (range)	3 (1 - 10)	4 (1 - 21)	-
Longer than 3 days, *n* (%)	28 (42.4)	30 (65.2)	0.03
Complications, *n* (%)	2 (3.0)	4 (8.7)	-
Blood transfusion	-	2 (4.3)	-
RPOC	1 (1.5)	1 (2.1)	-
VTE	1 (1.5)	1 (2.1)	-
HDU admission	3 (4.5)	12 (26.0)	<0.01
General ICU admission	-	-	-
Postpartum sepsis	1 (1.5)	4 (8.7)	0.07
Wound sepsis	1 (1.5)	1 (2.1)	-
Other*	-	3 (6.5)	-
Neonatal outcomes			
Weight (g), median (range)	3 200 (525 - 4 330)	3 430 (640 - 4 690)	-
Weight >4 000 g, *n* (%)	3 (4.5)	5 (10.9)	-
Weight <2 500 g, *n* (%)	7 (10.6)	10 (21.7)	-
Weight <1 500 g, *n* (%)	4 (6.1)	4 (8.7)	-
5-min Apgar <7	-	-	-
Complications	-	-	-

BMI = body mass index (kg/m²); RPOC = retained products of conception; VTE = venous thromboembolism; HDU = high-dependency unit; ICU = intensive care unit.
*Pneumonia, cellulitis.

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