

# Effect of treatment of gestational diabetes mellitus on pregnancy outcomes

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# Definition

**Gestational diabetes** also known as **gestational diabetes mellitus (GDM)**, is a condition in which a woman without **diabetes** develops **high blood sugar** levels during **pregnancy**.

# Prevalence

Gestational diabetes mellitus occurs in 2 to 9 percent of all pregnancies and is associated with substantial rates of maternal and perinatal complications. The risk of perinatal mortality is not increased but the risk of macrosomia is.

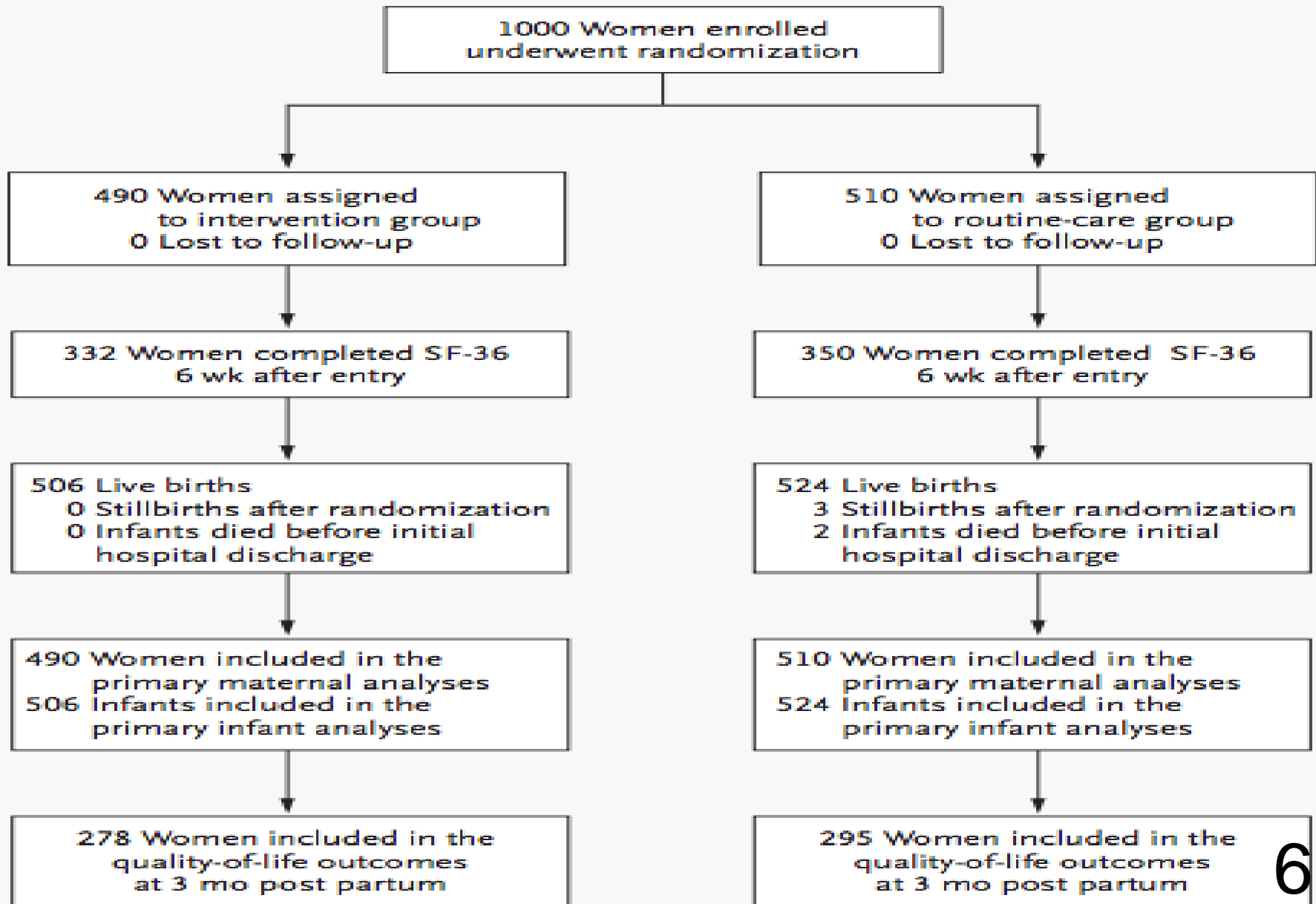
# Method

They randomly assigned women between 24 and 34 week's gestation who had gestational diabetes to receive dietary advice , blood glucose monitoring and insulin therapy as needed or routine care.

# Intervention

- individualized dietary advice from a qualified dietitian
- Women's pre pregnancy weight
- Activity level
- Dietary intake
- Weight gain
- self-monitor glucose levels
- insulin therapy

# Statistical Analysis



# Result

On the whole, the two groups were **similar at entry**. As compared with the women in the routine care group, women in the **intervention group were older and were less likely to be white or primiparous**. **Ninety-three** percent of the women had been found to be at risk for **gestational diabetes** on the basis of the **oral glucose-challenge test**, and the remainder on the basis of risk factors.

**Table 1. Baseline Characteristics of the Women.\***

<b>Characteristic</b>	<b>Intervention Group (N=490)</b>	<b>Routine-Care Group (N=510)</b>
Age — yr	30.9±5.4	30.1±5.5
Primiparous — no. (%)	212 (43)	251 (49)
Body-mass index†		
Median	26.8	26.0
Interquartile range	23.3–31.2	22.9–30.9
Race or ethnic group — no. (%)‡		
White	356 (73)	396 (78)
Asian	92 (19)	72 (14)
Other	42 (9)	42 (8)
Gestational age at entry — wk		
Median	29.1	29.2
Interquartile range	28.2–30.0	28.2–30.0
OGCT — mmol/liter		
Median	8.8	8.8
Interquartile range	8.2–9.7	8.3–9.7
OGTT for positive OGCT — no. (%)	461 (94)	471 (92)
Fasting	4.8±0.7	4.8±0.6
2-hr		
Median	8.6	8.5
Interquartile range	8.1–9.3	8.1–9.1
Previous pregnancy ending in perinatal death — no./total no. (%)	12/278 (4)	7/259 (3)



# Primary Outcomes

The rate of serious perinatal outcomes (defined as death, shoulder dystocia, bone fracture, and nerve palsy, admission to the neonatal nursery, jaundice requiring phototherapy, induction of labor, cesarean birth, and maternal anxiety, depression, and health status) among the infants was significantly lower in the interventional group than the routing group.

**Table 2. Primary Clinical Outcomes among the Infants and Their Mothers.\***

Outcome	Intervention Group <i>no. (%)</i>	Routine-Care Group	Unadjusted Relative Risk (95% CI)	Unadjusted P Value	Adjusted Relative Risk (95% CI) <sup>†</sup>	Adjusted P Value <sup>‡</sup>	Step-Down Sidak P Value
<b>Infants</b>							
Total no.	506	524					
Any serious perinatal complication <sup>‡</sup>	7 (1)	23 (4)	0.32 (0.14–0.73)	0.004	0.33 (0.14–0.75)	0.01	0.04
Death	0	5 (1)		0.06		0.07	
Stillbirth	0	3 (1) <sup>§</sup>		0.25		0.26	
Neonatal death	0	2 (<1)		0.50		0.50	
Shoulder dystocia <sup>¶</sup>	7 (1)	16 (3)	0.45 (0.19–1.09)	0.07	0.46 (0.19–1.10)	0.08	
Bone fracture	0	1 (<1)		1.00		0.38	
Nerve palsy	0	3 (1) <sup>  </sup>		0.25		0.11	
Admission to neonatal nursery <sup>**</sup>	357 (71)	321 (61)	1.15 (1.05–1.26)	0.002	1.13 (1.03–1.23)	0.01	0.04
Jaundice requiring phototherapy	44 (9)	48 (9)	0.95 (0.64–1.40)	0.79	0.93 (0.63–1.37)	0.72	0.98
<b>Women</b>							
Total no.	490	510					
Induction of labor <sup>††</sup>	189 (39)	150 (29)	1.31 (1.10–1.56)	0.002	1.36 (1.15–1.62)	<0.001	0.003
Cesarean delivery	152 (31)	164 (32)	0.96 (0.80–1.16)	0.70	0.97 (0.81–1.16)	0.73	0.98
Elective	72 (15)	61 (12)	1.23 (0.89–1.69)	0.20	1.17 (0.85–1.60)	0.33	
Emergency	80 (16)	103 (20)	0.81 (0.62–1.05)	0.11	0.87 (0.68–1.13)	0.31	

# Secondary Outcomes

No perinatal deaths occurred among the infants of mothers in the interventional group, but there were 5 perinatal deaths (3 still birth, 2 neonatal deaths) among infants born to women in the routine care group.

**Table 4. Secondary Outcomes among the Infants.\***

Outcome	Intervention Group (N=506)	Routine-Care Group (N=524)	Adjusted Treatment Effect (95% CI)†	Adjusted P Value†
Birth weight — g	3335±551	3482±660	-145 (-219 to -70)	<0.001
Large for gestational age — no. (%)‡	68 (13)	115 (22)	0.62 (0.47 to 0.81)	<0.001
Macrosomia (≥4 kg) — no. (%)	49 (10)	110 (21)	0.47 (0.34 to 0.64)	<0.001
Small for gestational age — no. (%)§	33 (7)	38 (7)	0.88 (0.56 to 1.39)	0.59
5-Min Apgar score <7 — no. (%)	6 (1)	11 (2)	0.57 (0.21 to 1.53)	0.26
Hypoglycemia requiring IV therapy — no. (%)¶	35 (7)	27 (5)	1.42 (0.87 to 2.32)	0.16
Neonatal convulsions — no. (%)	1 (<1)	2 (<1)	0.52 (0.05 to 5.69)	1.00
Respiratory distress syndrome — no. (%)	27 (5)	19 (4)	1.52 (0.86 to 2.71)	0.15

**Table 5. Secondary Clinical Outcomes among the Women.\***

<b>Outcome</b>	<b>Intervention Group (N=490)</b>	<b>Routine-Care Group (N=510)</b>	<b>Adjusted Treatment Effect (95% CI)†</b>	<b>Adjusted P Value†</b>
No. of antenatal clinic visits after enrollment				<0.001
Median	5.0	5.2		
Interquartile range	1–7	3–7		
No. of physician clinic visits after enrollment				<0.001
Median	3	0		
Interquartile range	1–7	0–2		
Visit with a dietitian — no. (%)	453 (92)	51 (10)	9.19 (7.08 to 11.94)	<0.001
Visit with a diabetes educator — no. (%)	460 (94)	56 (11)	8.56 (6.69 to 10.96)	<0.001
Weight gain from first prenatal visit to last visit — kg	8.1±0.3	9.8±0.4	-1.4 (-2.3 to -0.4)	0.01
Antenatal admission — no. (%)	141 (29)	139 (27)	1.10 (0.90 to 1.34)	0.34
Antenatal preeclampsia — no. (%)	58 (12)	93 (18)	0.70 (0.51 to 0.95)	0.02
Gestational age at birth — wk				0.01
Median	39.0	39.3		
Interquartile range	38.1–40.0	38.3–40.4		
Any perineal trauma — no. (%)	255 (52)	254 (50)	1.05 (0.93 to 1.19)	0.42
Postpartum hemorrhage (≥600 ml) — no. (%)	29 (6)	32 (6)	0.96 (0.59 to 1.56)	0.86
Puerperal pyrexia (≥38°C) — no. (%)	17 (3)	29 (6)	0.63 (0.35 to 1.13)	0.12
Length of postnatal stay — days				0.80
Median	4	4		
Interquartile range	3–5	3–5		
Breast-feeding at hospital discharge — no. (%)	413 (84)	412 (81)	1.04 (0.98 to 1.10)	0.17

# Discussion

- Others have reported an increased rate of cesarean delivery associated with the diagnosis and treatment of gestational diabetes. In our study, the rate of cesarean delivery was similar in the two groups.
- The reduction in the risk of preeclampsia in the intervention group may be related to the earlier gestational age at birth.