Gestational diabetes mellitus: The impact of new diagnostic criteria on pregnancy outcomes

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Background and aim

The World Health Organization (WHO) adopted new diagnostic criteria for gestational diabetes mellitus (GDM) in 2013. In the Netherlands, the WHO 1999 criteria are still used in GDM.
In this study, we aimed to evaluate the pregnancy outcomes when applying the old (WHO 1999, fasting glucose level ≥ 7.0 mmol/l and/or 2-h glucose level ≥ 7.8 mmol/l) vs. new WHO criteria (WHO 2013, fasting glucose level ≥ 5.1 mmol/l and/or 2-h glucose level ≥ 8.5 mmol/l).

Materials and methods

Women with singleton pregnancies were screened for GDM with a 75-gram oral glucose tolerance test (OGTT) if they had risk factors or signs suggestive (e.g. foetal macrosomia or polhydramnion) for GDM. All OGTT's were performed between January 2011 and January 2016.
Pregnancy outcomes were retrospectively compared between a non-GDM control group and two WHO groups (**Table 1**).

Results

In total, 2735 women were included (**Table 2**). GDM prevalence was 33.4% (WHO 1999) and 38.7% (WHO 2013). Women testing WHO 2013+/WHO 1999- (13.9%) were older, had a higher pre-gestational BMI, higher rates of emergency caesarean section and induction of labour compared with the control group. Frequency of large for gestational age (LGA) neonates (>P90) was not significant different. Women testing WHO 1999+/WHO 2013- had comparable rates of LGA neonates and emergency caesarean section compared with the control group. 20.5% of the women in this group were treated with insulin therapy.

Table 1. Study groups

Groups	Fasting glucose (mmol/l)	2-h glucose (mmol/l)
Non-GDM group (control group)	< 5.1	< 7.8
1. WHO 2013+/ WHO 1999-	≥ 5.1-6.9	< 7.8
2. WHO 1999+/ WHO 2013-	< 5.1	≥ 7.8-8.4

Table 2. Maternal characteristics and pregnancy outcomes

Outcomes	Control group (n= 1443)	WHO 2013+/WHO 1999- (n= 380)	WHO 1999+/WHO 2013- (n= 234)
Age (years)	30.2 ± 4.9	31.2 ± 5.2 [c]	31.6 ± 4.5 [c]
BMI (kg/m^2)	25.3 [21.8-30.5]	29.4 [24.8-33.8] [c]	26.4 [23.3-30.4] [c]
Birth weight, n (%)	3508 ± 581	3527 ± 600	3437 ± 497
LGA, n (%)	242 (16.8)	71 (18.7)	36 (15.4)
Induction of labour, n (%)	408 (28.5)	128 (34.1) [a]	147 (62.8) [c]
Emergency caesarean section, n (%)	181 (12.6)	63 (16.8) [a]	28 (12.0)
Planned caesarean section, n (%)	92 (6.4)	44 (11.7) [b]	21 (9.0)
Instrumental delivery, n (%)	152 (10.6)	33 (8.8)	20 (8.5)
Pregnancy induced hypertension, n (%)	77 (5.3)	30 (7.9)	16 (6.9)
Preeclampsia, n (%)	22 (1.5)	9 (2.4)	5 (2.1)

P-value: [a] p< 0.05 vs. control group, [b] p< 0.01 vs. control group, [c] p< 0.001 vs. control group.

Conclusion

The lower cut-off of fasting glucose in the WHO 2013 criteria identified a group of women (WHO 2013+/WHO 1999-) with an increased risk of adverse outcomes. However, adopting the WHO 2013 criteria with a higher 2-h glucose cut-off excluded women who now benefit from treatment. We conclude that change in WHO criteria will have considerable impact on pregnancy outcomes.