

EP 16.03. Effectiveness of continuous glucose monitoring in gestational diabetes: meta-analysis of randomized controlled trials and cohort studies

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Objectives

To evaluate the clinical effectiveness of continuous glucose monitoring (CGM) compared with self-monitoring of blood glucose (SMBG) for glycemic control and perinatal outcomes in women with gestational diabetes mellitus (GDM).

Methods

We conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) and cohort studies comparing CGM with SMBG in women with GDM. Primary outcomes included HbA1c, macrosomia, large-for-gestational-age (LGA), small-for-gestational-age (SGA), preterm birth, neonatal hypoglycemia, and NICU admission.

Keywords: gestational diabetes mellitus · continuous glucose monitoring · meta-analysis · RCT

Results

Fifteen studies (11 RCTs and 4 cohort studies) were analyzed. CGM significantly reduced HbA1c compared with SMBG (MD -0.17% , 95% CI -0.33 to -0.02). Subgroup analysis demonstrated a significant reduction in HbA1c among high-risk women with BMI ≥ 25 kg/m². However, CGM did not show consistent superiority over SMBG for major maternal and neonatal clinical outcomes (Figure 1, Table 1).

Conclusion

The use of CGM in GDM significantly improves glycemic control, particularly in high-risk women with elevated BMI. Current evidence does not yet show a consistent reduction in adverse perinatal outcomes, but CGM is a valuable tool for precision glycemic management in targeted GDM populations.

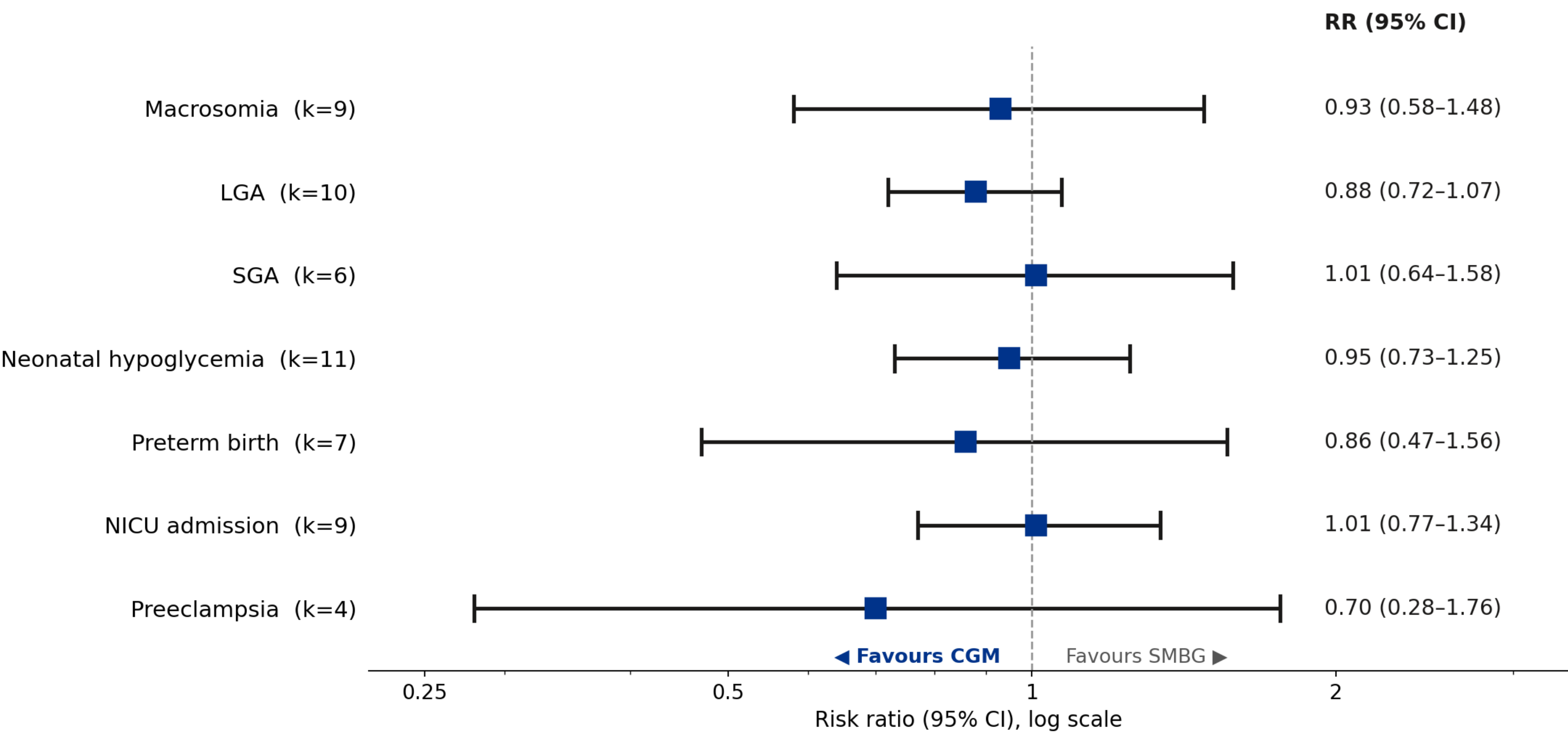


Figure 1. Pooled risk ratios (95% CI) for perinatal outcomes, CGM vs SMBG.

Outcome	Studies	Measure	Result (95% CI)	P
HbA1c (%)	15	MD	-0.17 (-0.33 , -0.02)	Significant
Macrosomia	9	RR	0.93 (0.58, 1.48)	NS
LGA	10	RR	0.88 (0.72, 1.07)	NS
SGA	6	RR	1.01 (0.64, 1.58)	NS
Neonatal hypoglycemia	11	RR	0.95 (0.73, 1.25)	NS
Preterm birth	7	RR	0.86 (0.47, 1.56)	NS
NICU admission	9	RR	1.01 (0.77, 1.34)	NS
Preeclampsia	4	RR	0.70 (0.28, 1.76)	NS

MD, mean difference; RR, risk ratio; NS, not significant; k, number of studies.

Table 1. Pooled effect estimates for glycemic and perinatal outcomes, CGM vs SMBG.