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Objective

The latest RCOG guidelines do not recommend any particular standard for the assessment of fetal size and growth. As a result many different charts are in use for assessment of fetal weight as well as birthweight in the UK National Health Service.

We have previously shown that customised definition of SGA is better than uncustomised by Hadlock, WHO, and Intergrowth 21st (2017) in recognising stillbirth risk in normal BMI and high BMI pregnancies.¹ In the current study, we set out to repeat the analysis for 2 newer population based standards which are now coming into NHS use.

Methods

The database consisted of 2,554,665 singleton British-European births, routinely recorded between 2016 to 2025 in the UK GAP program and included 9751 stillbirths (rate 3.80/1000). SGA (<10th centile) was defined according to three fetal weight standards:

- The Fetal Medicine Foundation (FMF) standard²
- The revised Intergrowth-21st (IG21) standard³
- The GROW fetal weight standard⁴, customised for ethnic origin, maternal height, weight and parity.

Stillbirth rates and SGA rates for each standard were calculated for

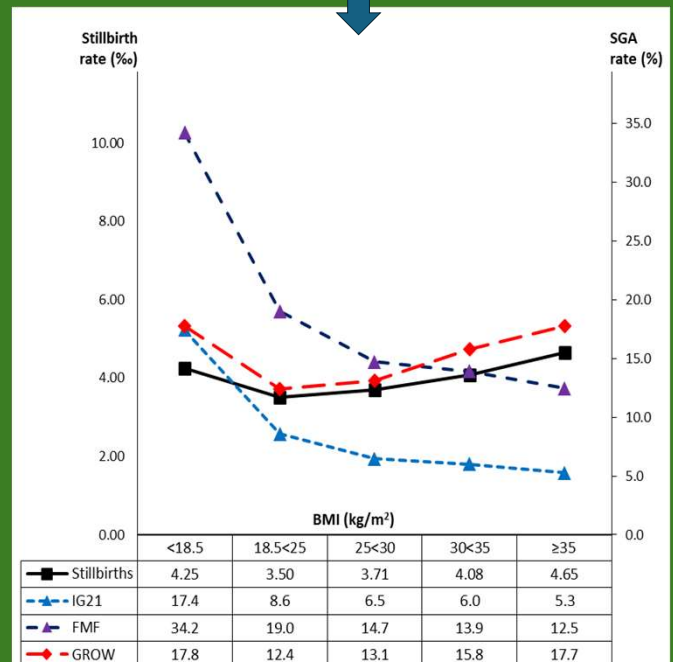
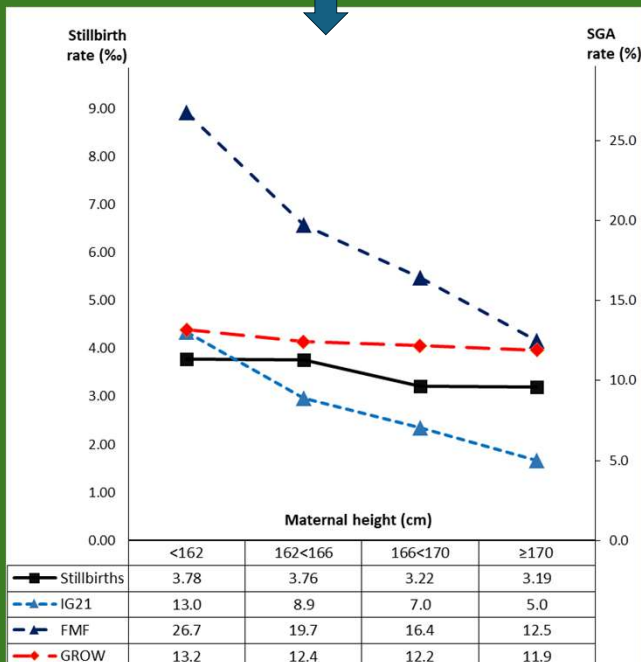
1. 4 maternal size groups within normal BMI (18.5 – 25), and 2. for 5 BMI groups. Trends were analysed using Clogg's Z test

Results (1): Maternal size groups, normal BMI

- Stillbirth rates were similar across the four maternal size groups, ranging from 3.78 to 3.19 per thousand.
- SGA rates showed large variation across the four groups in the IG21 (13.0 to 5.0%) and FMF (26.7 to 12.5%) population-average standards, significantly different than the stillbirth trend ($P < 0.01$).
- In contrast, GROW SGA rates were relatively uniform across the maternal size spectrum (13.2 to 11.9%), following a similar trend to the stillbirth rates.

Results (2): Different maternal BMI groups

- Stillbirth rates follow a U-shaped distribution across the five groups, with risk getting higher with increasing BMI
- Both population-average charts followed a downward trend with increasing BMI, significantly different ($P < 0.01$) than the trend in stillbirth rates. Both IG21 and FMF have their lowest SGA rates (5.3 and 12.5%) in the BMI > 35 group.
- In contrast, SGA rates according to GROW followed the same trend as stillbirth rates across the 5 BMI groups.



Summary/Conclusion

Consistent with previous findings¹:

- New population charts do not reflect stillbirth risk across the normal BMI maternal size spectrum.
- They hide the increased SGA rate in high BMI mothers, and therefore may miss growth restriction associated stillbirth risk.
- Customised charts identify the important association between increasing maternal BMI and risk of SGA associated stillbirth risk.

References

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