

# Excess SGA rate in South Asian pregnancies according to the UK-WHO birthweight standard does not represent stillbirth risk

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## Objective

- South Asian babies have an increased risk of stillbirth as well as a higher SGA rate according to the UK-WHO<sup>1</sup> birthweight standard.
- We wanted to examine if the two are related.

Table 1: Characteristics of South Asian and rest of population

	South Asian	Other
Pregnancies (N)	286,793	2,704,775
Maternal height (cm)	159	165
Maternal weight (kg)	64	69
Body mass index (kg/m <sup>2</sup> )	25.4	25.5
Nulliparous (%)	37.8	42.9
Gestation at birth (days)	275	277
Birthweight (grams)	3134	3400
Stillbirth rate (/1000)	5.48	4.17
UK-WHO SGA (%)	17.5	7.6
GROW SGA (%)	13.4	13.5

## Methods

- We studied a database of 2,991,568 singleton births, routinely collected between 2016 to 2023 in the UK GAP programme<sup>2</sup>.
- The data included a cohort of 286,793 South Asian pregnancies, which made up 9.6% of pregnancies
- SGA (<10<sup>th</sup> centile) was defined according to:
  - The **UK-WHO**<sup>1</sup> standard adjusted for sex
  - The **GROW** birthweight standard<sup>3</sup>, customised for ethnic origin as well as maternal height, weight, parity and sex
- The study cohort included 1571 stillbirths (rate 5.5/1000).
- Stillbirth risk was calculated for SGA (<10<sup>th</sup> centile) according to each standard, as well as the additional cases that were identified by one standard but missed by the other.

## Results (1)

- When using the customised standard, 39,984 (13.4%) of South Asian babies were SGA, while with the UK-WHO standard this increased to 52,468 (17.5%).
- Babies who were SGA by both standards had a relative risk (RR) of 3.8 (CI: 3.4-4.2).
- There were an additional 4,404 cases that were SGA by GROW but not by UK-WHO, and these were at significantly increased stillbirth risk (RR: 2.6; CI 1.9 – 3.4)
- An additional 16,888 (47%) cases were SGA by UK-WHO but not by GROW, and these cases did not have an increased risk of stillbirth (RR: 0.9; CI 0.8-1.2)

## Figure

SGA rates by GROW and UK-WHO standards, South Asian births N = 286,793; SB n = 1,571

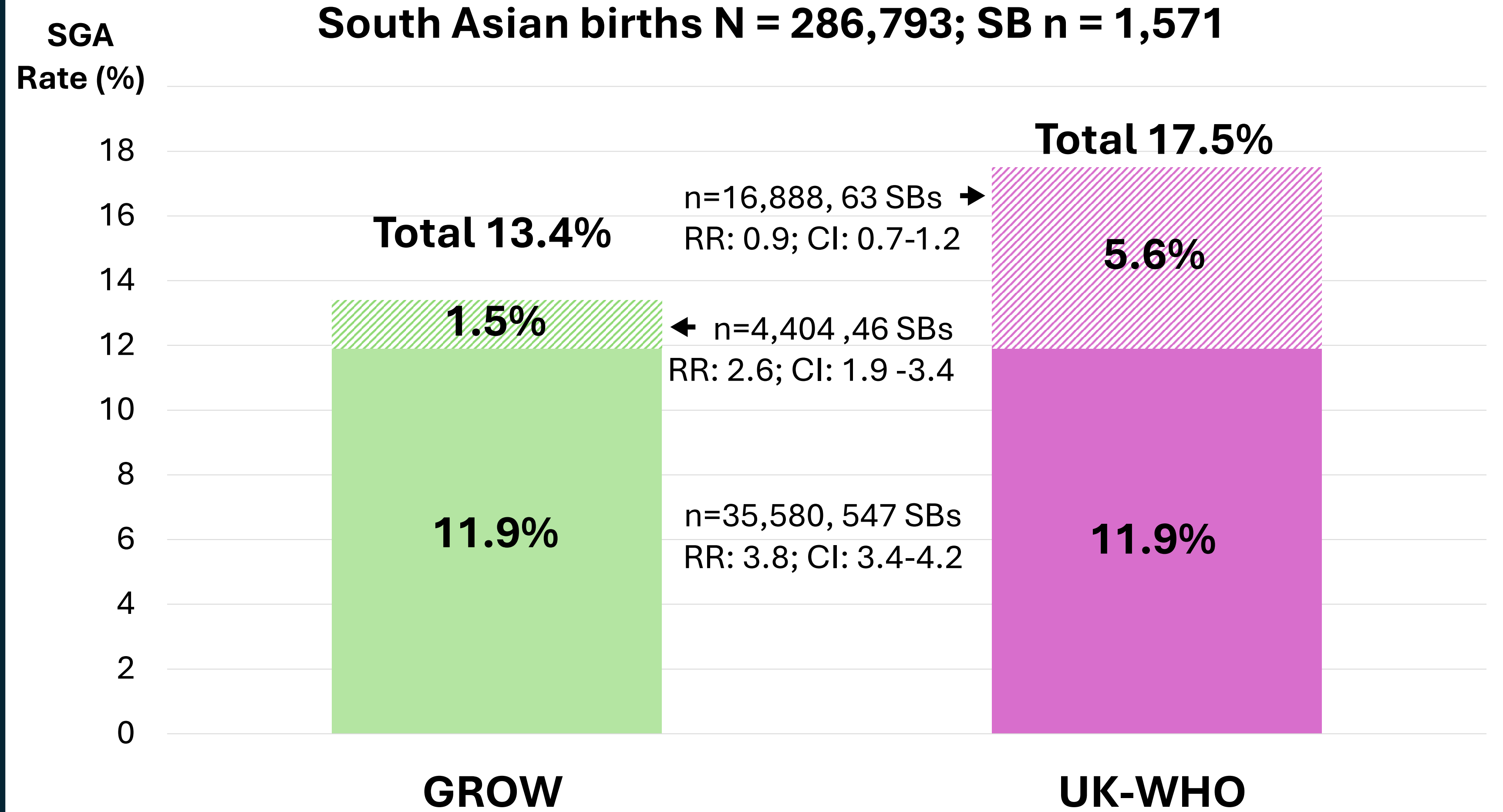


Table 2: Characteristics of SGA cases defined by the two standards

SGA cases as defined by:	GROW only	Both	UK-WHO only	Neither
Small for gestational age (%)	1.5	11.9	5.6	81.1
Maternal height (cm)	164	159	156	160
Maternal weight (kg)	82	64	54	65
Body mass index (kg/m <sup>2</sup> )	31	25.3	22.3	25.5
Nulliparous (%)	10.7	42.7	68.3	35.4
Gestation at birth (days)	271	272	276	275
Birthweight (grams)	2623	2388	2719	3251

## Results (2)

- The cases defined as SGA by UK-WHO only were more likely to be pregnancies of smaller, lighter and nulliparous mothers
- The cases defined as SGA by GROW only were more likely to be pregnancies of taller, heavier and multiparous mothers.
- UK-WHO standard also missed many mothers with high BMI.

## Summary/Conclusion

The higher SGA rate in South Asian babies according to the UK-WHO standard is not associated with higher stillbirth risk, and suggests that this standard fails to represent the birthweight distribution of this ethnic group. The increased stillbirth risk in South Asians is likely to be due to other causes, which may not be investigated and managed appropriately if misleading growth and birthweight standards are used.

## References

1. Cole TJ, Williams AF, Wright CM. Revised birth centiles for weight, length and head circumference in the UK-WHO growth charts. *Annals of Human Biology*. 2011 Jan;38(1):7-11. <http://www.tandfonline.com/doi/full/10.3109/03014460.2011.544139>
2. Perinatal Institute. Growth Assessment Protocol (GAP) 2013-2024 <https://www.perinatal.org.uk/GAP/Programme>
3. GROW Customised Centile Calculator v8.0.6.2 (UK). Gestation Network; 2023. [www.gestation.net](http://www.gestation.net)