

## **Body mass index trajectories in the first two years and subsequent childhood cardio-metabolic outcomes: a prospective multi-ethnic Asian cohort study**

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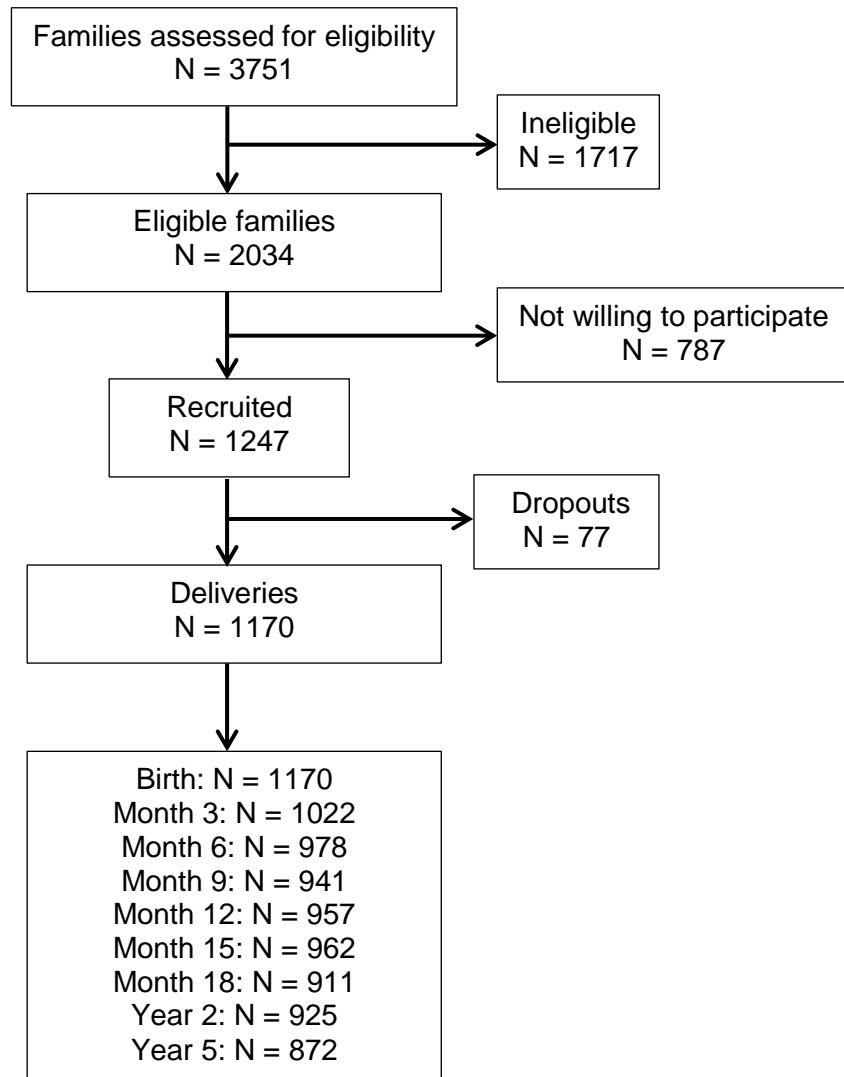
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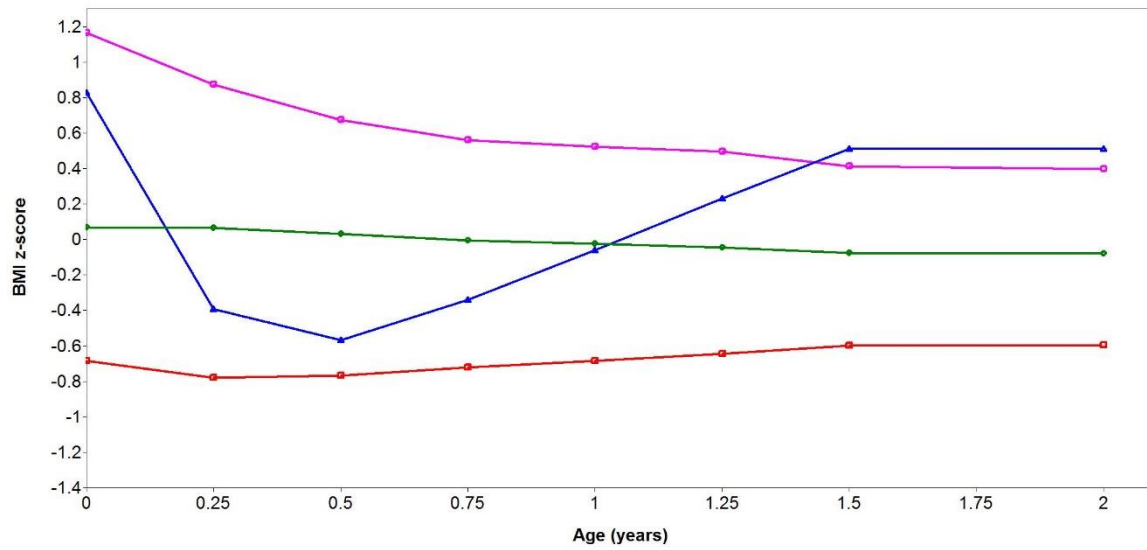
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**Supplemental Figure 1: GUSTO recruitment flowchart**



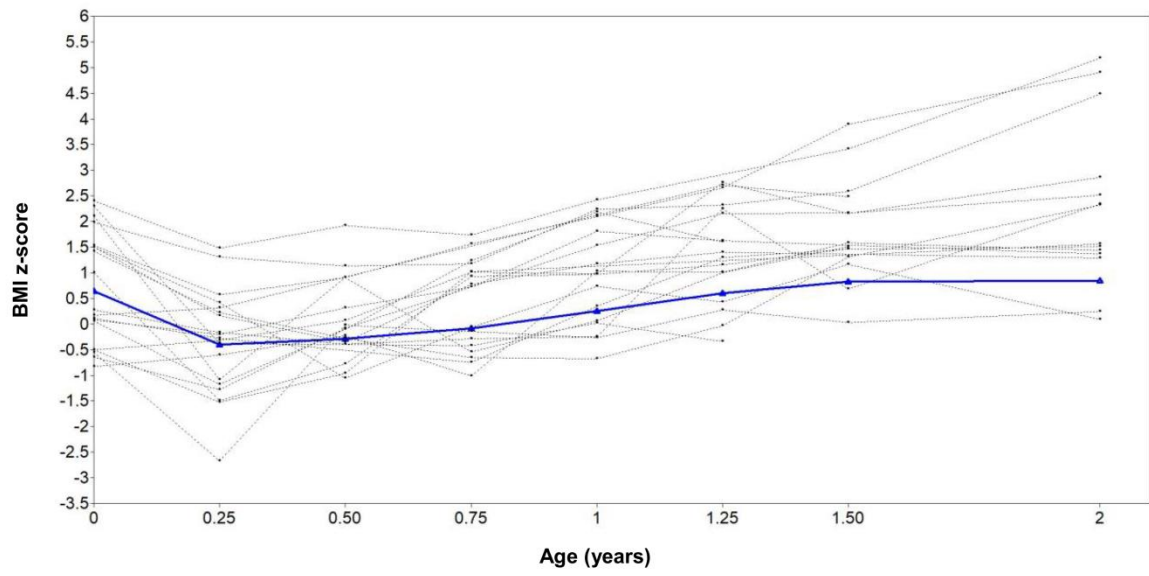
**Supplemental Figure 2:** BMIz trajectories of children with no missing BMIz data in the first 2 years (n=536)



**Legend**

- Stable low BMIz (n=76)
- Normal trajectory (n=379)
- Stable high BMIz (n=58)
- Rapid BMIz gain after 3 months (n=23)

**Supplemental Figure 3:** Individual trajectory patterns of children belonging to the rapid BMIz gain after 3 months trajectory



**Supplemental Table 1:** Frequency and proportion of missing BMlz data at each time point, and across all time points in the first 2 years

<b>Missing BMlz data at each timepoint</b>	<b>n</b>	<b>%</b>
Birth	0	0.0
Month 3	148	12.6
Month 6	192	16.4
Month 9	229	19.6
Month 12	213	18.2
Month 15	208	17.8
Month 18	259	22.1
Month 24	245	20.9

<b>Missing BMlz data across all timepoints</b>		
0	536	45.8
1	282	24.1
2	119	10.2
3	62	5.3
4	25	2.1
5	30	2.6
6	30	2.6
7	86	7.3

**Supplemental Table 2:** Model fit indices for latent-class growth mixture modelling of BMI z-scores in the first 2 years of life

<b>Number of subgroups</b>	<b>Bayesian Information Criterion</b>	<b>Bootstrapped likelihood-ratio test p-value</b>	<b>Average posterior probability (min-max)</b>	<b>Number of subjects per subgroup</b>
2	17892.483	< 0.001	0.819 - 0.847	989/181
3	17813.559	< 0.001	0.805 - 0.843	912/222/36
4	17612.72	0.012	0.748 - 0.790	857/155/100/58
5	17632.501	0.333	0.748 - 0.804	868/152/98/18/34

**Supplemental Table 3: Cross-tabulation of BMIz trajectory group assignments in the entire study sample and in those with no missing BMIz data**

Entire sample <sup>a</sup>	Stable low BMIz <sup>a</sup>	Normal BMIz <sup>a</sup>	Stable high BMIz <sup>a</sup>	Rapid BMIz gain after 3 months <sup>a</sup>	Row Total
<b>Completed cases</b>					
<b>Stable low BMIz<sup>b</sup></b>	76	0	0	0	76
<b>Normal BMIz<sup>b</sup></b>	0	379	0	0	379
<b>Stable high BMIz<sup>b</sup></b>	0	0	58	0	58
<b>Rapid BMIz gain after 3 months<sup>b</sup></b>	0	0	0	23	23
<b>Column Total</b>	76	379	58	23	536

<sup>a</sup> Top most header indicates the trajectory patterns derived in the entire sample.

<sup>b</sup> Left-most grid indicates the trajectory patterns derived using the “completed cases” (i.e., children with no missing BMIz data in the first 2 years). The number of subjects for each trajectory pattern is indicated as row total.

**Supplemental Table 4:** Corresponding BMI percentile at age 2 years for each BMiz trajectory group

<b>BMiz trajectories</b>	<b>Corresponding BMI percentile at age 2 years</b>
<b>Stable low BMiz (n=155)</b>	10
<b>Normal BMiz trajectory (n=857)</b>	45
<b>Stable high BMiz (n=100)</b>	80
<b>Rapid BMiz gain after 3 months (n=58)</b>	94



**Supplemental Table 5:** Booking BMI as a predictor BMI z-score trajectory subgroups in the first 2 years of life

Booking BMI (per unit SD increase)	Odds ratio	95% CI	
		Low	High
Stable low-weight	0.70	0.57	0.88
Normal trajectory	1.00	-	-
Stable high-weight	1.51	1.20	1.92
Rapid weight gain	1.57	1.17	2.12

Other co-variables adjusted in the model include maternal income level, parity, GA at delivery, ethnicity, gestational weight gain and height

**Supplemental Table 6:** Estimated mean and standard deviations of cardio-metabolic measures in children of the stable high BMIz and rapid BMIz gain trajectories

	<b>Stable high BMIz</b>	<b>Rapid BMIz gain</b>	<b>p value</b>
<b>Waist-to-Height Ratio (n=864)<sup>a</sup></b>	0.50 ± 0.01	0.52 ± 0.01	0.01
<b>Sum of skinfolds (n=820)<sup>a</sup></b>	0.36 ± 0.21	0.70 ± 0.33	<0.01
<b>Fat-mass index (n=247)<sup>a</sup></b>	0.18 ± 0.43	0.90 ± 0.37	<0.01
<b>Lean-mass index (n=247)<sup>a</sup></b>	0.53 ± 0.24	0.44 ± 0.36	0.39
<b>Systolic blood pressure<sup>b</sup> (n=757)<sup>a,b</sup></b>	100.1 ± 1.5	102.7 ± 2.4	0.16
<b>Diastolic blood pressure<sup>b</sup> (n=757)<sup>a,b</sup></b>	59.4 ± 0.9	59.7 ± 0.9	0.97

<sup>a</sup> Estimates represent means and standard deviations adjusted for maternal income level, ppBMI, height, GWG, parity, GA at delivery, breastfeeding, child ethnicity, sex and exact age at measurement

<sup>b</sup> Additionally adjusted for maternal blood pressure at 26-28 weeks of gestation

**Supplemental Table 7:** Explained variance of BMIz trajectories in the first 2 years of life and static BMIz at age 2 years predicting cardio-metabolic outcomes at age 5-years

Outcome at 5-years	Explained variance		
	Covariates only <sup>a</sup>	w/ BMIz trajectories	w/ static BMIz at 2-years
<b>Waist-to-Height Ratio (n=864)</b>	6.5%	15.3%	15.8%
<b>Sum of skinfolds (n=820)</b>	8.2%	14.0%	16.3%
<b>Fat-mass index (n=247)</b>	8.8%	26.5%	16.9%
<b>Lean-mass index (n=247)</b>	9.4%	17.6%	14.6%
<b>Systolic blood pressure<sup>b</sup> (n=757)</b>	2.6%	3.4%	3.2%
<b>Diastolic blood pressure<sup>b</sup> (n=757)</b>	2.7%	3.5%	2.9%
	Area under ROC curve		
<b>Obesity (n=65/872)</b>	0.71	0.80	0.77
<b>Prehypertension (n=92/757)</b>	0.59	0.61	0.61

<sup>a</sup> Covariates only model includes: maternal income level, ppBMI, height, GWG, parity, GA at delivery, breastfeeding, child ethnicity, sex and exact age at measurement

<sup>b</sup> Additionally adjusted for maternal blood pressure at 26-28 weeks of gestation