

Table S1 Participants' characteristics and pregnancy outcomes during the original HAPO study, and children's characteristics and cardiovascular risk factors during the HAPO follow-up study

	n=926
Paternal BMI during pregnancy (kg/m ²)	22.9 (20.9-25.1)
Maternal characteristics and outcomes during pregnancy	
Age (years)	31.5 (28.1-34.4)
Gestational age (weeks)	39.6 (38.7-40.4)
Pre-pregnancy BMI (kg/m ²)	20.3 (19.0-22.3)
Gestational weight gain (kg)	15.1 (12.4-18.0)
Below IOM recommendations	157 (17.3)
Within IOM recommendations	371 (40.9)
Exceeding IOM recommendations	379 (41.8)
Nulliparity	547 (59.1)
Gestational hypertension / preeclampsia	16 (1.7)
Smoker	14 (1.5)
GDM	132 (14.3)
Newborn anthropometrics	
Birth weight (g)	3198 (2950-3490)
Body length (cm)	49.4 (48.2-50.4)
Ponderal index (kg/m ³)	26.9 (25.4-28.4)
Suprailiac skin fold (mm)	3.1 (2.6-3.6)
Triceps skin fold (mm)	4.4 (3.8-4.9)
Subscapular skin fold (mm)	4.2 (3.6-4.8)
Sum of skinfolds (mm)	11.7 (10.4-13.3)
Children's characteristics	
Age (years)	6.9 (6.7-7.2)
Sex (male)	482 (52.1)
Exercise level	
No exercise	91 (9.8)
Mild exercise	489 (53.0)
Vigorous exercise	343 (37.2)

Childhood cardiovascular risk factors

Adiposity traits

Body weight (kg)	22.4 (20.2-25.3)
BMI (kg/m ²)	14.5 (13.6-15.9)
BMI percentile	38.4 (16.0-68.6)
Waist circumference (cm)	53.0 (50.0-57.0)
Waist-hip ratio	0.84 (0.81-0.86)
Sum of skinfolds (mm)	30.5 (25.2-40.1)

Blood pressure and arterial stiffness

Systolic BP (mmHg)	101.7 (95.7-107.7)
Diastolic BP (mmHg)	61.3 (56.3-66.7)
Systolic BP percentile	62.8 (43.1-80.5)
Diastolic BP percentile	60.9 (44.9-77.8)
Carotid-femoral pulse wave velocity (m/s)	4.7 (4.3-5.2)

Data are expressed as median (IQR) or n (%).

HAPO, Hyperglycemia and Adverse Pregnancy Outcomes; IOM, Institute of Medicine.

Table S2 Associations between newborn anthropometrics z-score and childhood cardiovascular risk factors z-score by sex

	Male N =483		Female N =443	
	β (95% CI)	P	β (95% CI)	P
Childhood anthropometrics				
<i>Birth weight</i>				
Body weight	0.17 (0.07 to 0.26)	<0.001	0.24 (0.15 to 0.34)	<0.001
BMI percentile Δ	0.13 (0.03 to 0.22)	0.011	0.22 (0.12 to 0.32)	<0.001
WC	0.07 (-0.03 to 0.16)	0.151	0.17 (0.07 to 0.27)	0.001
WHR	-0.01 (-0.11 to 0.08)	0.796	-0.03 (-0.14 to 0.07)	0.527
SSF	0.05 (-0.05 to 0.16)	0.331	0.04 (-0.05 to 0.14)	0.387
<i>Newborn PI</i>				
Body weight	0.06 (-0.02 to 0.15)	0.154	0.1 (0.007 to 0.19)	0.036
BMI percentile Δ	0.17 (0.08 to 0.27)	<0.001	0.15 (0.05 to 0.25)	0.002
WC	0.09 (-0.003 to 0.18)	0.059	0.06 (-0.04 to 0.15)	0.240
WHR	0.14 (0.05 to 0.23)	0.003	0.06 (-0.04 to 0.16)	0.221
SSF	0.09 (-0.009 to 0.2)	0.074	0.02 (-0.07 to 0.1)	0.719
<i>Newborn SSF</i>				
Body weight	0.01 (-0.09 to 0.11)	0.802	0.06 (-0.03 to 0.15)	0.182
BMI percentile Δ	0.07 (-0.04 to 0.17)	0.193	0.1 (0.005 to 0.2)	0.040
WC	-0.02 (-0.12 to 0.08)	0.720	0.11 (0.01 to 0.2)	0.024
WHR	-0.05 (-0.15 to 0.05)	0.329	0.05 (-0.04 to 0.15)	0.272
SSF	0.14 (0.02 to 0.25)	0.019	0.09 (0.004 to 0.18)	0.041
Childhood blood pressure and arterial stiffness				
<i>Birth weight</i>				
SBP percentile Δ	-0.11 (-0.21 to -0.007)	0.036	-0.01 (-0.12 to 0.09)	0.826
DBP percentile Δ	-0.03 (-0.13 to 0.07)	0.588	0.01 (-0.09 to 0.11)	0.829
cfPWV ∇	-0.008 (-0.11 to 0.09)	0.870	0.04 (-0.07 to 0.15)	0.456
<i>Newborn PI</i>				
SBP percentile Δ	-0.09 (-0.19 to 0.003)	0.057	-0.07 (-0.17 to 0.03)	0.164
DBP percentile Δ	-0.04 (-0.13 to 0.05)	0.408	-0.11 (-0.2 to -0.01)	0.026
cfPWV ∇	-0.09 (-0.18 to 0.01)	0.079	-0.1 (-0.2 to -0.003)	0.044
<i>Newborn SSF</i>				
SBP percentile Δ	0.02 (-0.09 to 0.13)	0.686	0.09 (-0.004 to 0.19)	0.059
DBP percentile Δ	0.11 (0.008 to 0.22)	0.035	0.13 (0.04 to 0.23)	0.005
cfPWV ∇	0.03 (-0.07 to 0.14)	0.527	0.11 (0.01 to 0.21)	0.026

Childhood cardiovascular risk factors were adjusted for gestational age at birth, child's age and exercise level, except for ∇ was further adjusted for child's height, Δ were calculated according to sex-, age- and/or height-specific references.

CI, confidence interval; PI, Ponderal index; SSF, sum of skinfolds; BMI, body mass index; WC, waist circumference; WHR, waist-hip ratio; SBP, systolic blood pressure; DBP, diastolic blood pressure; cfPWV, carotid-femoral pulse wave velocity.

Table S3 Associations of maternal GWG with newborn anthropometrics z-score and childhood cardiovascular risk factors z-score

	Maternal GWG below IOM		Maternal GWG exceeding IOM	
	β (95% CI)	P	β (95% CI)	P
Newborn anthropometrics (mediators)				
Birth weight	-0.29 (-0.45 to -0.12)	<0.001	0.31 (0.18 to 0.43)	<0.001
PI	-0.27 (-0.47 to -0.07)	0.007	0.22 (0.07 to 0.37)	0.004
SSF	-0.30 (-0.49 to -0.12)	0.001	0.22 (0.08 to 0.36)	0.003
Childhood cardiovascular risk factors (outcomes)				
<i>Anthropometrics</i>				
Body weight	0.07 (-0.11 to 0.26)	0.445	0.36 (0.22 to 0.50)	<0.001
BMI Percentile	-0.01 (-0.20 to 0.18)	0.913	0.34 (0.19 to 0.49)	<0.001
SSF	0.04 (-0.15 to 0.23)	0.676	0.23 (0.08 to 0.37)	0.002
<i>Blood pressure and arterial stiffness</i>				
SBP percentile	0.04 (-0.15 to 0.24)	0.652	0.16 (0.02 to 0.31)	0.027
DBP percentile	0.19 (-0.002 to 0.38)	0.053	0.23 (0.09 to 0.38)	0.002
cfPWV (m/s)	-0.02 (-0.22 to 0.18)	0.832	0.11 (-0.04 to 0.26)	0.167

Data are expressed as β (95% CI).

Children of mothers obtaining GWG below (n =157) or exceeding (n =371) the IOM recommendations were compared with children of mothers obtaining GWG within (n =379) the recommendations, respectively. Newborn anthropometrics were adjusted for gestational age at birth, paternal BMI, maternal age, parity, gestational hypertension/preeclampsia, smoking status and glycemic status in pregnancy and child's sex. Childhood cardiovascular risk factors were adjusted for covariates mentioned above plus child's age and exercise level.

GWG, gestational weight gain; IOM, Institute of Medicine; CI, confidence interval; PI, Ponderal index; SSF, sum of skinfolds; (1)DV, dependent variable; BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; cfPWV, carotid-femoral pulse wave velocity.

Figure S1 Flow chart

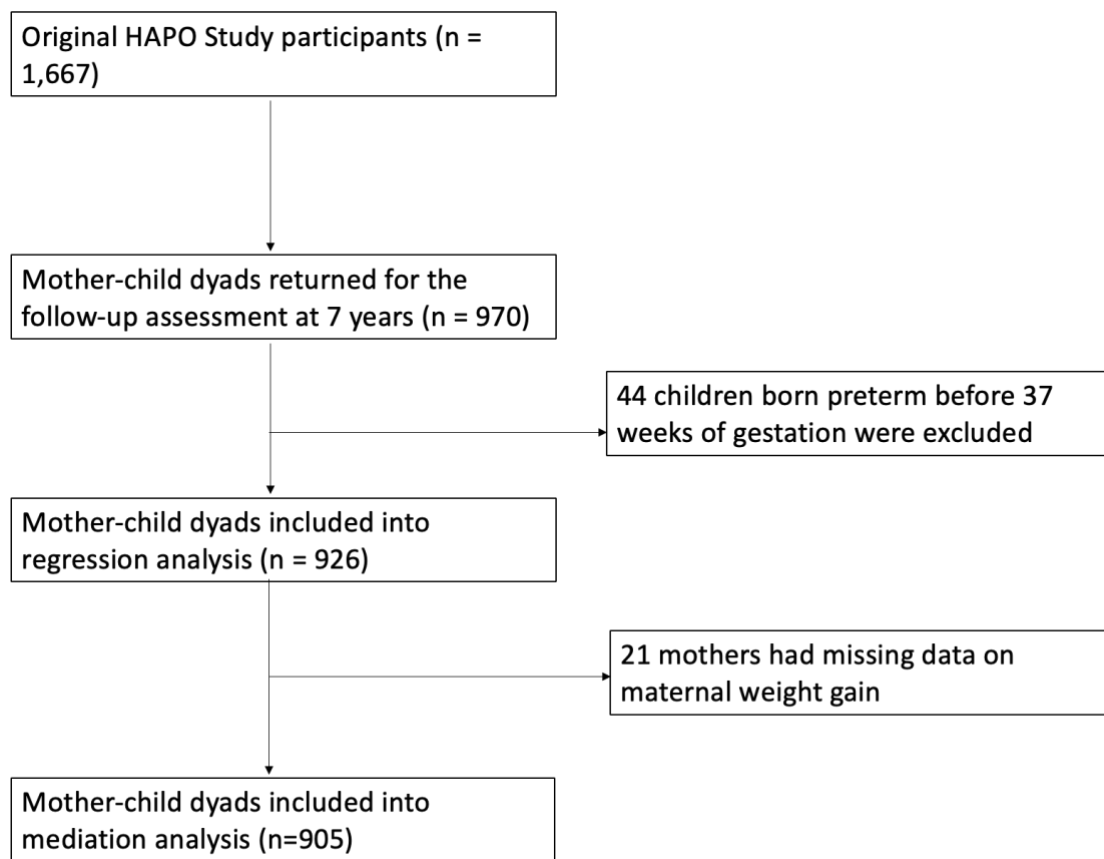
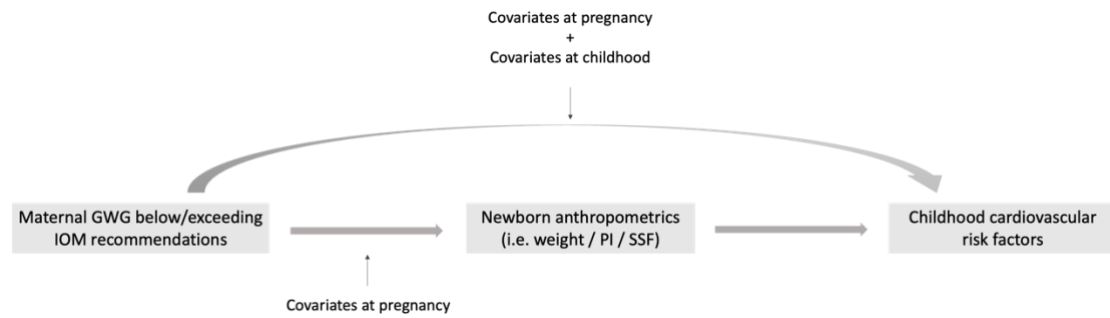


Figure S2 Causal mediation analysis of maternal GWG with childhood cardiovascular risk factors mediated by newborn anthropometrics



Children of mothers obtaining GWG below or exceeding the IOM recommendations were compared with children of mothers obtaining GWG within the recommendations, respectively.

Covariates at pregnancy included gestational age at birth, paternal BMI; maternal age, parity, gestational hypertension/preeclampsia, smoking status and glycemic status at pregnancy and child's sex.

Covariates at childhood included child's age and exercise level.

GWG, gestational weight gain; IOM, Institute of Medicine; PI, Ponderal index; SSF, sum of skinfold.