Supplementary Information

Associations of social and economic and pregnancy exposures with blood pressure in UK White British and Pakistani children age 4/5

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Additional tables (x 13) reporting unadjusted associations and adjusted associations presented numerically (rather than in figures as presented in the manuscript), and additional models referred to but not presented in the manuscript.

Supplementary eTable 1 Distributions of offspring characteristics stratified by ethnicity and sex

Characteristic		All n=3468	White British n=1644	Pakistani origin n=1824	p-value*	Characteristic
Child Height (cm)	*Boys*	108.79 (4.97)	108.48 (4.99)	109.11 (4.93)	0.009	
mean (sd)		n=1670	n=822	n=848		
	Girls	108.04 (4.96)	107.70 (4.94)	108.32 (4.97)	0.008	
		n=1798	n=822	n=976		
Child Weight (kg)	*Boys*	19.09 (3.02)	19.17 (2.69)	19.02 (3.31)	0.309	
mean (sd)		n=1670	n=822	n=848		
	Girls	18.88 (3.13)	19.01 (2.94)	18.77 (3.28)	0.111	
		n=1798	n=822	n=976		
Child BMI (kg/m^2)	*Boys*	16.06 (1.69)	16.24 (1.47)	15.89 (1.87)	0.000	
mean (sd)		n=1670	n=822	n=848		
	Girls	16.09 (1.77)	16.32 (1.63)	15.91 (1.86)	0.000	
		n=1798	n=822	n=976		
Child systolic BP	*Boys*	98.51	98.55 (10.26)	98.47 (10.24)	0.874	
mean (sd)		n=1670	n=822	n=848		
	Girls	97.27	97.34 (10.83)	97.21 (11.39)	0.800	
		n=1798	n=822	n=976		
Child diastolic BP	*Boys*	60.39 (10.58)	59.54 (10.32)	61.21 (10.76)	0.001	
mean (sd)		n=1670	n=822	n=848		
	Girls	62.04 (11.45)	61.48 (10.43)	62.51 (12.23)	0.058	
		n=1798	n=822	n=976		

*Difference between White British and Pakistan

Supplementary eTable 2a Unadjusted associations between family social and economic exposures and offspring BP at age 4/5 stratified by ethnic group

Measure	Maternal education Baseline: 5 GCSEs or less			Housing tenure Baseline: owning/part owning home			Receipt of means tested benefits Baseline: not receiving benefits		
	White British n=1644	*Pakistani n=1824*	*p value[T]*	*White British n=1644*	*Pakistani n=1824*	*p value[T]*	*White British n=1644*	*Pakistani n=1824*	*p value[T]*
Systolic mmHg	0.449 (-0.577, 1.475)	-1.748 (-2.755, -0.739)	0.003	0.089 (-0.941, 1.121)	0.011 (-1.155, 1.176)	0.334	-1.207 (-2.264, -0.151)	0.265 (-.737, 1.267)	0.048
Diastolic mmHg	0.368 (-0.644, 1.380)	-1.621 (-2.694, -0.547)	0.009	0.308 (-0.709, 1.326)	-0.263 (-1.50, 0.978)	0.602	-0.319 (-1.363, 0.724)	-0.616 (-1.682, 0.450)	0.699

Values are differences in means (95% CI) of outcome per maternal exposure unit or category
[T] interaction p-value, difference between White British and Pakistani

Supplementary eTable 2b
Unadjusted associations between pregnancy exposures (BMI and smoking) and offspring BP at age 4/5 stratified by ethnic group

Measure	Maternal BMI *Difference in means per 5 kg/m^2*			Maternal smoking in pregnancy *Baseline: no smoking*		
	White British n=1644	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*
Systolic mmHg	0.308 (-0.121, 0.736)	0.666 (0.203, 1.129)	0.265	-0.184 (-1.268, 0.899)	0.023 (-2.675, 2.720)	0.887
Diastolic mmHg	0.067 (-0.355, 0.489)	0.339 (-0.154, 0.832)	0.412	-0.292 (-1.361, 0.777	1.089 (-1.781, 3.960)	0.360

Values are differences in means (95% CI) of outcome per exposure unit or category, maternal BMI is difference in means per 5kg/m^2
†interaction p-value, difference between White British and Pakistani

Supplementary eTable 2c
Unadjusted associations between pregnancy exposures (glycaemia and HDP) and offspring BP at age 4/5 stratified by ethnic group

Measure	Fasting glucose *Difference in means per 1mmol/L*			Post-load glucose *Difference in means per 1mmol/L*			GDM *Baseline: no GDM*			HDP: gestational hypertension *Baseline: no gestational hypertension*			HDP: pre-eclampsia *Baseline: pre-eclampsia*		
	White British n=1644	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*
Systolic mmHg	1.203 (0.011, 2.396)	0.981 (0.104, 1.857)	0.769	0.422 (0.028, 0.816)	0.278 (-0.032, 0.588)	0.575	1.189 (-1.186, 3.563)	0.979 (-0.702, 2.659)	0.888	1.359 (-0.271, 2.988)	3.181 (0.759, 5.602)	0.219	2.566 (-0.568, 5.699)	3.905 (0.617, 7.193)	0.563
Diastolic mmHg	-0.032 (-1.209, 1.145)	0.667 (-0.267, 1.601)	0.371	0.141 (-0.249, 0.530)	0.196 (-0.134, 0.526)	0.834	0.687 (-1.655, 3.029)	0.851 (-.938, 2.639)	0.915	0.355 (-1.254, 1.964)	3.464 (0.883, 6.045)	0.042	1.597 (-1.497, 4.691)	1.186 (-2.318, 4.689)	0.863

Values are differences in means (95% CI) of outcome per exposure unit or category
[†]interaction p-value, difference between White British and Pakistani

Supplementary eTable 3a Adjusted associations of family social and economic exposures and offspring BP at age 4/5 stratified by ethnic group (Model 1*)

Measure	Maternal education *Baseline: 5 GCSEs or less*			Housing tenure *Baseline: owning/part owning home*			Receipt of means tested benefits *Baseline: not receiving benefits*		
	White British n=1644	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*
Systolic mmHg	0.419 (-0.600, 1.439)	-1.753 (-2.759, -0.749)	0.003	0.112 (0.912, 1.137)	0.132 (-1.033, 1.297)	0.945	-1.196 (-2.246, -0.145)	0.329 (-0.669, 1.329)	0.038
Diastolic mmHg	0.414 (-0.595, 1.421)	-1.577 (-2.649, -0.503)	0.009	0.321 (-0.693, 1.334)	-0.226 (-1.469, 1.017)	0.508	-0.376 (-1.416, 0.664)	-0.602 (-1.667, 0.464)	0.761

Model 1: Adjusted for sex; age at measurement
Values are differences in means (95% CI) of outcome per maternal exposure unit or category
[†]interaction p-value, difference between White British and Pakistani

Supplementary eTable 3b Adjusted associations of pregnancy exposures (BMI and smoking) and offspring BP at age 4/5 stratified by ethnic group (Model 1*)

Measure	Maternal BMI Difference in means per 5 kg/m^2			Maternal smoking in pregnancy Baseline: no smoking		
	White British n=1644	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*
Systolic mmHg	0.314 (-0.112, 0.740)	0.678 (0.217, 1.139)	0.248	-0.172 (-1.249, 0.906)	-0.022 (-2.711, 2.667)	0.888
Diastolic mmHg	0.101 (-0.319, 0.523)	0.333 (-0.159, 0.826)	0.476	-0.238 (-1.304, 0.827)	1.149 (-1.718, 4.018)	0.360

*Model 1: Adjusted for sex; age at measurement
Values are differences in means (95% CI) of outcome per maternal exposure unit or category, maternal BMI is difference in means per 5kg/m^2
†interaction p-value, difference between White British and Pakistani

Supplementary eTable 3c Adjusted associations of pregnancy exposures (glycaemia and HDP) and offspring BP at age 4/5 stratified by ethnic group (Model 1*)

Measure	Fasting glucose *Difference in means per 1mmol/L*			Post-load glucose *Difference in means per 1mmol/L*			GDM *Baseline: no GDM*			HDP: gestational hypertension *Baseline: no gestational hypertension*			HDP: pre-eclampsia *Baseline: no pre-eclampsia*		
	White British n=1644	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*
Systolic mmHg	1.114 (-0.072, 2.299)	0.955 (0.079, 1.830)	0.802	0.404 (0.013, 0.797)	0.268 (-0.041, 0.578)	0.570	1.037 (-1.325, 3.399)	0.872 (-0.804, 2.548)	0.880	1.299 (-0.321, 2.919)	3.051 (0.636, 5.466)	0.240	2.459 (-0.658, 5.575)	3.909 (0.636, 5.466)	0.529
Diastolic mmHg	-0.026 (-1.199, 1.148)	0.624 (-0.310, 1.559)	0.411	0.140 (-.248, 0.528)	0.182 (-0.149, 0.512)	0.886	0.583 (-1.753, 2.919)	0.849 (-0.938, 2.638)	0.869	0.446 (-1.158, 2.049)	3.508 (0.929, 6.087)	0.043	1.812 (-1.271, 4.896)	1.154 (-2.347, 4.654)	0.792

*Model 1: Adjusted for sex; age at measurement
Values are differences in means (95% CI) of outcome per maternal exposure unit or category
[†] interaction p-value, difference between White British and Pakistani*

Supplementary eTable 4a Adjusted associations of pregnancy exposures (BMI and smoking) and offspring BP at age 4/5 stratified by ethnic group (Model 2*)
(For Social and economic variables, model 1 and 2 are the same)

Measure	Maternal BMI** Difference in means per 5 kg/m^2			Maternal smoking in pregnancy Baseline: no smoking		
	White British n=1644	Pakistani n=1824	p value†	White British n=1644	Pakistani n=1824	p value†
Systolic mmHg	0.261 (-0.174, 0.695)	0.564 (0.078, 1.049)	0.309	0.262 (-0.919, 1.442)	-0.030 (-2.728, 2.667)	0.974
Diastolic mmHg	0.024 (-0.407, 0.455)	0.305 (-0.214, 0.824)	0.468	-0.009 (-1.179, 1.162)	1.131 (-1.749, 4.010)	0.390

*Model 2: Adjusted for sex; age at measurement; maternal age; parity; maternal education; family housing tenure; family receipt of benefits
**Additionally adjusted for smoking in pregnancy
Values are differences in means (95% CI) of outcome per maternal exposure unit or category, maternal BMI is difference in means per 5kg/m^2
†interaction p-value, difference between White British and Pakistani

Supplementary eTable 4b Adjusted associations of pregnancy exposures (glycaemia and HDP) and offspring BP at age 4/5 stratified by ethnic group (Model 2*)

Measure	Fasting glucose *Difference in means per 1mmol/L*			Post-load glucose *Difference in means per 1mmol/L*			GDM *Baseline: no GDM*			HDP: gestational hypertension *Baseline: no gestational hypertension*			HDP: pre-eclampsia *Baseline: no pre-eclampsia*		
	White British n=1644	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*
Systolic mmHg	0.894 (-0.307, 2.095)	0.838 (-0.059, 1.735)	0.806	0.292 (-0.108, 0.693)	0.216 (-0.107, 0.538)	0.524	0.599 (-1.778, 2.977)	0.683 (-1.024, 2.390)	0.836	1.078 (-0.544, 2.711)	3.104 (0.678, 5.529)	0.253	2.301 (-0.825, 5.427)	4.043 (0.762, 7.324)	0.521
Diastolic mmHg	-0.243 (-1.435, 0.949)	0.573 (-0.385, 1.531)	0.385	0.070 (-0.327, 0.467)	0.156 (-0.189, 0.500)	0.885	0.321 (-2.037, 2.679)	0.761 (-1.061, 2.583)	0.865	0.355 (-1.265, 1.975)	3.355 (0.763, 5.948)	0.049	1.854 (-1.249, 4.957)	1.101 (-2.406, 4.609)	0.751

Model 2: : Adjusted for sex; age at measurement; maternal age; parity; smoking in pregnancy; maternal education; family housing tenure; family receipt of benefits
Values are differences in means (95% CI) of outcome per maternal exposure unit or category
†interaction p-value, difference between White British and Pakistani

Supplementary eTable 5 Adjusted associations of pregnancy exposures (glycaemia and HDP) and offspring BP at age 4/5 stratified by ethnic group (Model 3*)
(For Social and economic variables, model 1, 2 and 3 are the same; for family variables models 2 and 3 are the same)

Measure	Fasting glucose *Difference in means per 1mmol/L*			Post-load glucose *Difference in means per 1mmol/L*			GDM *Baseline: no GDM*			HDP: gestational hypertension *Baseline: no gestational hypertension*			HDP: pre-eclampsia *Baseline: no pre-eclampsia*		
	White British n=1644	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*
Systolic mmHg	0.749 (-0.504, 2.003)	0.613 (-0.314, 1.539)	0.908	0.259 (-0.147, 0.665)	0.155 (-0.172, 0.482)	0.557	0.498 (-1.886, 2.881)	0.408 (-1.316, 2.131)	0.810	0.914 (-0.773, 2.601)	2.818, (0.372, 5.265)	0.231	2.169 (-0.976, 5.314)	3.685 (0.379, 6.990)	0.526
Diastolic mmHg	-0.285 (-1.529, 0.959)	0.459 (-0.531, 1.450)	0.355	0.068 (-0.335, 0.472)	0.124 (-0.226, 0.474)	0.870	0.313 (-2.052, 2.679)	0.619 (-1.222, 2.462)	0.875	0.377 (-1.298, 2.051)	3.218 (0.601, 5.835)	0.048	1.871 (-1.251, 4.993)	0.929 (-2.607, 4.465)	0.749

*Model 3: Adjusted for sex; age at measurement; maternal BMI; maternal age; parity; smoking in pregnancy; maternal education; family housing tenure; family receipt of benefits
Values are differences in means (95% CI) of outcome per maternal exposure unit or category
†interaction p-value, difference between White British and Pakistani

Supplementary eTable 6a Adjusted associations of family social and economic exposures and offspring BP at age 4/5 stratified by ethnic group (Model 4*)

Measure	Maternal education Baseline: 5 GCSEs or less			Housing tenure Baseline: owning/part owning home			Receipt of means tested benefits Baseline: not receiving benefits		
	White British n=1644	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*	*White British n=1644*	*Pakistani n=1824*	*p value[†]*
Systolic mmHg	0.651 (-0.349, 1.652)	-1.591 (-2.569, -0.613)	0.003	-0.069 (-1.074, 0.935)	0.033 (-1.100, 1.167)	0.945	-1.360 (-2.389, -0.331)	0.272 (-0.699, 1.244)	0.038
Diastolic mmHg	0.543 (-0.459, 1.547)	-1.461 (-2.522, -0.400)	0.009	0.219 (-0.789, 1.227)	-0.297 (-1.525, 0.931)	0.508	-0.468 (-1.501, 0.566)	-0.643 (-1.696, 0.410)	0.761

*Model 4: Adjusted for sex; age at measurement; maternal age; parity; smoking in pregnancy; maternal education; family housing tenure; family receipt of benefits; child BMI at BP measurement
Values are differences in means (95% CI) of outcome per maternal exposure unit or category
[†]interaction p-value, difference between White British and Pakistani

Supplementary eTable 6b Adjusted associations of pregnancy exposures (BMI and smoking) and offspring BP at age 4/5 stratified by ethnic group (Model 4*)

Measure	Maternal BMI** Difference in means per 5 kg/m^{2**}			Maternal smoking in pregnancy Baseline: no smoking		
	White British n=1644	*Pakistani n=1824*	*p value†*	*White British n=1644*	*Pakistani n=1824*	*p value†*
Systolic mmHg	-0.270 (-0.713, 0.172)	-0.228 (-.726, 0.271)	0.863	0.242 (-0.913, 1.397)	-1.367 (-4.003, 1.269)	0.392
Diastolic mmHg	-0.279 (-0.725, 0.167)	-0.265 (-0.805, 0.276)	0.858	-0.020 (-1.184, 1.143)	0.186 (-2.674, 3.045)	0.753

*Model 4: Adjusted for sex; age at measurement; maternal age; parity; maternal education; family housing tenure; family receipt of benefits; child BMI at BP measurement
**Additionally adjusted for smoking in pregnancy
Values are differences in means (95% CI) of outcome per maternal exposure unit or category, maternal BMI is difference in means per 5kg/m^2
†interaction p-value, difference between White British and Pakistani

Supplementary eTable 6c Adjusted associations of pregnancy exposures (glycaemia and HDP) and offspring BP at age 4/5 stratified by ethnic group (Model 4*)

Measure	Fasting glucose** Difference in means per 1mmol/L			Post-load glucose** Difference in means per 1mmol/L**			GDM** Baseline: no GDM			HDP: gestational hypertension** Baseline: no gestational hypertension			HDP: pre-eclampsia** Baseline: no pre-eclampsia		
	White British n=1644	Pakistani n=1824	p value†	White British n=1644	Pakistani n=1824	p value†	White British n=1644	Pakistani n=1824	p value†	White British n=1644	Pakistani n=1824	p value†	White British n=1644	Pakistani n=1824	p value†
Systolic mmHg	0.876 (-0.350, 2.103)	0.598 (-0.305, 1.500)	0.576	0.286 (-0.111, 0.684)	0.119 (-0.199, 0.438)	0.314	0.716 (-1.617, 3.049)	0.263 (-1.416, 1.941)	0.546	0.981 (-0.671, 2.632)	2.386 (0.002, 4.769)	0.463	2.173 (-0.905, 5.251)	4.130 (0.910, 7.350)	0.440
Diastolic mmHg	-0.213 (-1.449, 1.023)	0.448 (-0.531, 1.428)	0.514	0.084 (-0.316, 0.485)	0.098 (-0.248, 0.444)	0.926	0.438 (-1.912, 2.788)	0.516 (-1.305, 2.336)	0.945	0.414 (-1.248, 2.078)	2.909 (0.320, 5.497)	0.091	1.874 (-1.227, 4.975)	1.246 (-2.251, 4.743)	0.807

*Model 4: Adjusted for sex; age at measurement; maternal age; parity; smoking in pregnancy; maternal education; family housing tenure; family receipt of benefits; child BMI at BP measurement
**Additionally adjusted for maternal BMI
Values are differences in means (95% CI) of outcome per maternal exposure unit or category
†interaction p-value, difference between White British and Pakistani