

Table S1 Detailed information of the genome-wide association study in our analysis

Outcome	Year	Population	Sample size	
			Cases	Controls
GDM	2021	European	6,033	110,330
CP	2021	European	286	216,992
ASD	2017	European	18,382	27,969
Epilepsy	2018	European	2,326	460,684

Table S2 Detailed information for the SNPs in MR analysis

Trait	SNP	Chr	Position	Nearest gene	Effect Allele	Exposure (GDM)			Outcome (Offspring CP)		
						Beta	se	P	Beta	se	P
GDM	rs10830963	11	92708710	<i>MTNR1B</i>	G	0.32	0.02	8.76e-53	0.05	0.09	0.56
GDM	rs1260326	2	27730940	<i>GCKR</i>	C	0.12	0.02	4.50e-08	0.09	0.06	0.31
GDM	rs59649116	5	95287113	<i>ELL2</i>	A	-0.14	0.02	1.31e-08	-0.14	0.10	0.17
GDM	rs7074440	10	114785424	<i>TCF7L2</i>	A	0.19	0.03	1.03e-13	0.23	0.11	0.03
GDM	rs73410774	6	32789739	<i>TAP2</i>	T	0.52	0.04	5.08e-31	0.30	0.18	0.09
GDM	rs9275373	6	32668411	<i>TAP2</i>	A	0.43	0.03	1.21e-43	0.30	0.13	0.02

Table S3 Details of variance explained by the selected instruments and F-statistics for the MR analysis

SNPs	R^2 of instrument	F-statistic score
rs10830963	0.048	5,747.07
rs1260326	0.006	679.68
rs59649116	0.007	781.81
rs7074440	0.011	1,305.12
rs73410774	0.027	3,218.96
rs9275373	0.040	4,742.76

Table S4 Diseases and traits associated with genetic variants identified for GDM at genome-wide significance level

SNPs	P value	Traits	PubMed ID	Location
rs10830963	8e-14	Fasting blood glucose measurement	33402679	11:92975544
	3e-11	Birth weight	31043758	11:92975544
rs1260326	7e-24	Triglyceride measurement	26690388	2:27508073
	1e-35	Lymphocyte count	32888493	2:27508073
rs7074440	5e-9	Serum albumin measurement	34321204	10:113025665
rs9275373	2e-8	Gestational diabetes	36553520	6:32700634

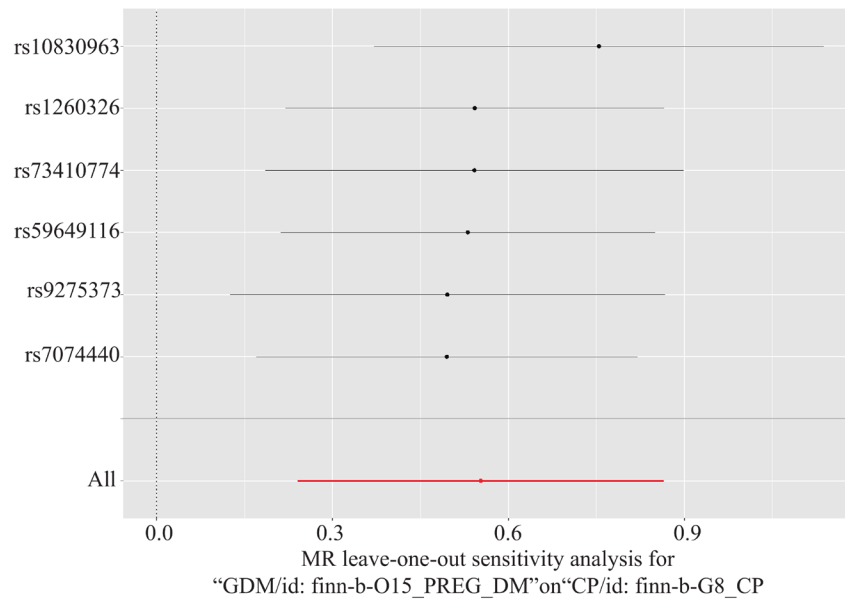


Figure S1 Plots of “leave-one-out” analysis for MR analysis of the causal effect of GDM on offspring CP. The red points and red lines denote the overall effect and 95% CI in MR analyses. The grey points and grey lines signify the effect and 95% CI of removing each SNP sequentially, respectively.