

Supplementary Material

Maternal Genetic Liability to Autism Spectrum Disorder and Pregnancy Outcomes

Archives of Women's Mental Health

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Figure S1. Flowchart of Participant Retention for Primary Analysis

This figure summarizes the inclusion and exclusion steps used to identify females with at least one pregnancy-related record in UKB and who passed genetic QC.

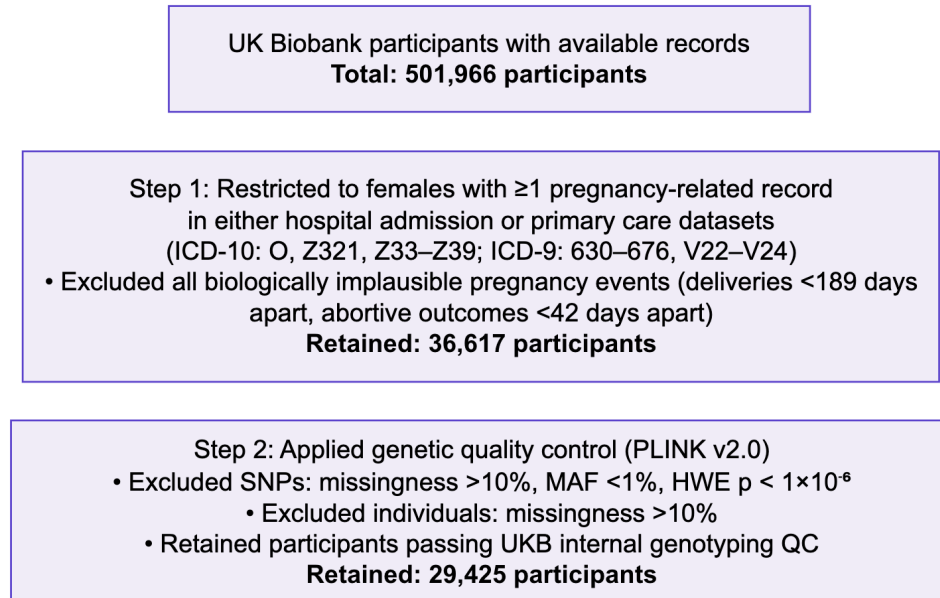


Table S1. Eligible ICD-10 Pregnancy Codes

ICD-10 Level-2 Sub-category	ICD-10 Level-3 Code	UKB Field ID	Frequency
O00-O08 Pregnancy with abortive outcome	O00 Ectopic pregnancy	132162	380
	O01 Hydatidiform mole	132164	92
	O02 Other abnormal products of conception	132166	1,120
	O03 Spontaneous abortion	132168	3,839
	O04 Medical abortion	132170	1,861
	O06 Unspecified abortion	132174	394
	O08 Complications following abortion, ectopic, and molar pregnancy	132178	36
O10-16 Edema, proteinuria, and hypertensive disorders in pregnancy, childbirth, and the puerperium	O10 Pre-existing hypertension complicating pregnancy, childbirth, and the puerperium	132180	57
	O11 Pre-existing hypertensive disorder with superimposed proteinuria	132182	14
	O12 Gestational (pregnancy-induced) oedema and proteinuria without hypertension	132184	103
	O13 Gestational (pregnancy-induced) hypertension without significant proteinuria	132186	351
	O14 Gestational (pregnancy-induced) hypertension with significant proteinuria	132188	255
	O15 Eclampsia	132190	65
	O16 Unspecified maternal hypertension	132192	605
O20-29 Other maternal disorders predominantly related to pregnancy	O20 Haemorrhage in early pregnancy	132194	872
	O21 Excessive vomiting in	132196	186

	pregnancy		
	O22 Venous complications in pregnancy	132198	71
	O23 Infections of genito-urinary tract in pregnancy	132200	143
	O24 Diabetes mellitus in pregnancy	132202	319
	O26 Maternal care for other conditions predominantly related to pregnancy	132206	920
	O28 Abnormal findings on antenatal screening of mother	132208	40
O30-48 Maternal care related to the foetus and amniotic cavity and possible delivery problems	O30 Multiple gestation	132212	355
	O31 Complications specific to multiple gestation	132214	17
	O32 Maternal care for known or suspected malpresentation of foetus	132216	602
	O33 Maternal care for known or suspected disproportion	132218	30
	O34 Maternal care for known or suspected abnormality of pelvic organs	132220	754
	O35 Maternal care for known or suspected foetal abnormality and damage	132222	147
	O36 Maternal care for other known or suspected foetal problems	132224	887
	O40 Polyhydramnios	132226	56

	O41 Other disorders of amniotic fluid and membranes	132228	146
	O42 Premature rupture of membranes	132230	448
	O43 Placental disorders	132232	94
	O44 Placenta praevia	132234	98
	O45 Premature separation of placenta (abruptio placentae)	132236	22
	O46 Antepartum haemorrhage, not elsewhere classified	132238	268
	O47 False labor	132240	434
	O48 Prolonged pregnancy	132242	452
O60-77 Complications of labour and delivery	O60 Preterm delivery	132244	401
	O61 Failed induction of labour	132246	73
	O62 Abnormalities of forces of labor	132248	149
	O63 Long labour	132250	806
	O64 Obstructed labour due to malposition and malpresentation of foetus	132252	190
	O65 Obstructed labour due to maternal pelvic abnormality	132254	16
	O66 Other obstructed labour	132256	155
	O67 Labour and delivery complicated by intrapartum haemorrhage, not elsewhere classified	132258	47
	O68 Labour and delivery complicated by foetal stress (distress)	132260	1,366
	O69 Labour and delivery complicated by umbilical cord complications	132262	288

	O70 Perineal laceration during delivery	132264	2,289
	O71 Other obstetric trauma	132266	103
	O72 Postpartum haemorrhage	132268	913
	O73 Retained placenta and membranes, without haemorrhage	132270	94
	O74 Complications of anesthesia during labor and delivery	132272	14
	O75 Other complications of labour and delivery, not elsewhere classified	132274	383
O80-82 Encounter for delivery	O80 Single spontaneous delivery	132276	11,113
	O81 Single delivery by forceps and vacuum extractor	132278	1,497
	O82 Single delivery by caesarean section	132280	1,955
	O83 Other assisted single delivery	132282	14
	O84 Multiple delivery	132284	13
O85-92 Complications predominantly related to the puerperium	O85 Puerperal sepsis	132286	44
	O86 Other puerperal infections	132288	111
	O87 Venous complications in the puerperium	132290	52
	O90 Complications of the puerperium, not elsewhere classified	132296	131
	O91 Infections of breast associated with childbirth	132298	248
	O92 Other disorders of breast and lactation associated with childbirth	132300	126
O94-9A Other obstetric conditions, not elsewhere classified	O98 Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium	132310	32

	O99 Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium	132312	957
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Table S2. Participants' Demographic Table

Sample Characteristics	N = 29,425
	mean [SD]
ASD PRS	-2.44×10^{-3} [4.02×10^{-5}]
Age at first pregnancy	36.00 [3.75]
	n (%)
Ethnicity,	
British	26,113 (88.74)
Other	3,312 (11.26)
Maternal smoking around birth,	
Yes	7,567 (25.72)
No	18,317 (62.25)
Do not know	3,081 (10.47)
NA	460 (1.57)
Parities,	
Single parity (=1)	13,075 (44.44)
More than 1 (>1)	12,824 (43.58)
Overall health rating,	
Excellent	5,188 (17.63)
Good	17,486 (59.42)
Fair	5,407 (18.38)
Poor	1,181 (4.01)
Do not know	127 (0.43)
NA	36 (0.12)
Education,	
College or university degree	3,388 (11.51)
A levels/AS levels or equivalent	766 (2.60)
O levels/GCSEs or equivalent	3,470 (11.79)
CSEs or equivalent	1,212 (4.12)
NVQ or HND or HNC or equivalent	1,204 (4.09)
Other professional qualifications	1,536 (5.22)
None of the above	4,028 (13.69)
NA	13,562 (46.97)

Table S3. Logistic Regression Results for the Association between ASD PRS and Pregnancy Outcomes

ICD Codes	B	SE	Z	OR	p value	q value	Lower CI	Upper CI
O00 Ectopic pregnancy	0.010	0.059	0.17	1.01	0.863	0.985	0.90	1.13
O01 Hydatidiform mole	0.107	0.118	0.90	1.11	0.368	0.935	0.88	1.40
O02 Other abnormal products of conception	0.053	0.035	1.54	1.05	0.124	0.689	0.99	1.13
O03 Spontaneous abortion	0.024	0.020	1.21	1.02	0.226	0.877	0.99	1.06
O04 Medical abortion	-0.015	0.027	-0.56	0.98	0.577	0.935	0.93	1.04
O06 Unspecified abortion	0.039	0.057	0.69	1.04	0.490	0.935	0.93	1.16
O08 Complications following abortion and ectopic and molar pregnancy	-0.010	0.194	-0.05	0.99	0.960	0.985	0.68	1.45
O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium	0.156	0.155	1.01	1.17	0.313	0.935	0.86	1.58
O11 Pre-existing hypertensive disorder with superimposed proteinuria	0.206	0.329	0.62	1.23	0.532	0.935	0.64	2.34
O12 Gestational oedema and proteinuria without hypertension	0.062	0.112	0.55	1.06	0.581	0.935	0.85	1.32

O13 Gestational hypertension (no proteinuria)	-0.029	0.061	-0.48	0.97	0.631	0.941	0.86	1.10
O14 Gestational hypertension (with proteinuria)	-0.054	0.072	-0.75	0.95	0.453	0.935	0.82	1.09
O15 Eclampsia	0.221	0.141	1.57	1.25	0.116	0.689	0.95	1.64
O16 Unspecified maternal hypertension	0.064	0.047	1.39	1.07	0.166	0.773	0.97	1.17
O20 Haemorrhage in early pregnancy	0.002	0.039	0.05	1.00	0.958	0.985	0.93	1.08
O21 Excessive vomiting in pregnancy	0.090	0.086	1.04	1.09	0.298	0.935	0.92	1.30
O22 Venous complications in pregnancy	-0.214	0.134	-1.60	0.81	0.110	0.689	0.62	1.05
O23 Infections of genito-urinary tract in pregnancy	0.018	0.097	0.18	1.02	0.855	0.985	0.84	1.23
O24 Diabetes in pregnancy	-0.061	0.066	-0.93	0.94	0.354	0.935	0.83	1.07
O26 Maternal care: other conditions	0.068	0.038	1.77	1.07	0.077	0.689	0.99	1.15
O28 Abnormal findings on antenatal screening of mother	-0.330	0.180	-1.83	0.72	0.067	0.689	0.50	1.02
O30 Multiple gestation	-0.008	0.060	-0.14	0.99	0.890	0.985	0.88	1.12
O31 Complications specific to multiple gestation	0.404	0.269	1.50	1.50	0.134	0.689	0.88	2.54

O32 Malpresentation of foetus	-0.036	0.047	-0.78	0.96	0.436	0.935	0.88	1.06
O33 Maternal care for known or suspected disproportion	0.116	0.208	0.56	1.12	0.577	0.935	0.75	1.69
O34 Abnormality of pelvic organs	0.020	0.043	0.47	1.02	0.641	0.941	0.94	1.11
O35 Suspected foetal abnormality	-0.009	0.094	-0.10	0.99	0.923	0.985	0.82	1.19
O36 Other foetal problems	-0.035	0.039	-0.90	0.97	0.370	0.935	0.89	1.04
O40 Polyhydramnios	0.115	0.152	0.76	1.12	0.449	0.935	0.83	1.51
O41 Other disorders of amniotic fluid and membranes	0.066	0.094	0.70	1.07	0.481	0.935	0.89	1.28
O42 Premature rupture of membranes	-0.023	0.055	-0.42	0.98	0.674	0.948	0.88	1.09
O43 Placental disorders	-0.113	0.116	-0.98	0.89	0.329	0.935	0.71	1.12
O44 Placenta praevia	0.039	0.117	0.33	1.04	0.739	0.956	0.83	1.31
O45 Premature separation of placenta	0.147	0.250	0.59	1.16	0.557	0.935	0.71	1.89
O46 Antepartum haemorrhage	0.021	0.070	0.29	1.02	0.769	0.977	0.89	1.17
O47 False labor	0.115	0.055	2.08	1.12	0.037	0.689	1.01	1.25
O48 Prolonged pregnancy	-0.007	0.054	-0.13	0.99	0.899	0.985	0.89	1.10
O60 Preterm delivery	0.023	0.058	0.40	1.02	0.693	0.948	0.91	1.15
O61 Failed induction of labor	0.064	0.136	0.47	1.07	0.637	0.941	0.82	1.39

O62 Abnormalities of labor forces	-0.008	0.094	-0.09	0.99	0.929	0.985	0.83	1.19
O63 Long labor	0.047	0.041	1.15	1.05	0.248	0.910	0.97	1.13
O64 Obstructed labor: malpresentation	-0.013	0.083	-0.16	0.99	0.871	0.985	0.84	1.16
O65 Obstructed labor due to maternal pelvic abnormality	0.111	0.292	0.38	1.12	0.704	0.948	0.63	1.98
O66 Other obstructed labor	-0.082	0.091	-0.90	0.92	0.366	0.935	0.77	1.10
O67 Labor and delivery complicated by intrapartum haemorrhage	0.221	0.164	1.35	1.25	0.176	0.773	0.91	1.72
O68 Foetal distress	-0.005	0.032	-0.16	0.99	0.869	0.985	0.93	1.06
O69 Umbilical cord complications	-0.052	0.067	-0.78	0.95	0.436	0.935	0.83	1.08
O70 Perineal laceration	0.047	0.025	1.89	1.05	0.058	0.689	1.00	1.10
O71 Other obstetric trauma	-0.044	0.112	-0.39	0.96	0.695	0.948	0.77	1.19
O72 Postpartum haemorrhage	0.069	0.038	1.79	1.07	0.073	0.689	0.99	1.15
O73 Retained placenta/membranes	0.068	0.117	0.58	1.07	0.562	0.935	0.85	1.34
O74 Complications of anesthesia during labor and delivery	0.101	0.302	0.33	1.11	0.738	0.956	0.61	2.00
O75 Other labor complications	0.009	0.059	0.15	1.01	0.881	0.985	0.90	1.13
O80 Spontaneous delivery	-0.022	0.014	-1.59	0.98	0.111	0.689	0.95	1.01

O81 Forceps/vacuum delivery	-0.062	0.030	-2.03	0.94	0.042	0.689	0.89	1.00
O82 Caesarean section	0.002	0.027	0.08	1.00	0.934	0.985	0.95	1.06
O83 Other assisted single delivery	-0.315	0.306	-1.03	0.73	0.303	0.935	0.40	1.33
O84 Multiple delivery	-0.213	0.318	-0.67	0.81	0.502	0.935	0.43	1.51
O85 Puerperal sepsis	0.255	0.171	1.49	1.29	0.136	0.689	0.92	1.81
O86 Other puerperal infections	-0.143	0.111	-1.30	0.87	0.195	0.806	0.70	1.08
O87 Venous complications (puerperium)	-0.116	0.156	-0.75	0.89	0.455	0.935	0.66	1.21
O90 Complications of the puerperium	-0.181	0.100	-1.81	0.83	0.070	0.689	0.69	1.01
O91 Infections of breast associated with childbirth	0.042	0.072	0.58	1.04	0.560	0.935	0.91	1.20
O92 Other disorders of breast and lactation associated with childbirth	-0.001	0.102	-0.01	1.00	0.991	0.991	0.82	1.22
O98 Maternal infectious and parasitic diseases complicating pregnancy	-0.007	0.200	-0.04	0.99	0.970	0.985	0.67	1.47
O99 Other maternal diseases complicating pregnancy	0.019	0.038	0.49	1.02	0.624	0.941	0.95	1.10

Note. B= coefficient. SE = standard error. Z = z value. OR = odds ratio. $p < .05$. $q < .05$.

Table S4. Logistic Regression Results for the Association between SCZ PRS and Pregnancy Outcomes

ICD Codes	B	SE	Z	OR	p value	q value	Lower CI	Upper CI
O00 Ectopic pregnancy	-0.047	0.047	-1.01	0.95	0.314	0.905	0.87	1.05
O01 Hydatidiform mole	0.079	0.096	0.82	1.08	0.410	0.905	0.90	1.31
O02 Other abnormal products of conception	0.046	0.028	1.61	1.05	0.107	0.786	0.99	1.11
O03 Spontaneous abortion	-0.001	0.016	-0.04	1.00	0.971	0.985	0.97	1.03
O04 Medical abortion	0.040	0.022	1.78	1.04	0.075	0.617	1.00	1.09
O06 Unspecified abortion	0.001	0.047	0.02	1.00	0.985	0.985	0.91	1.10
O08 Complications following abortion and ectopic and molar pregnancy	0.018	0.151	0.12	1.02	0.902	0.985	0.76	1.37
O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium	0.089	0.120	0.74	1.09	0.460	0.905	0.86	1.38
O11 Pre-existing hypertensive disorder with superimposed proteinuria	0.064	0.225	0.28	1.07	0.776	0.985	0.69	1.66
O12 Gestational oedema and proteinuria without hypertension	-0.096	0.094	-1.03	0.91	0.304	0.905	0.76	1.09
O13 Gestational hypertension (no proteinuria)	0.015	0.049	0.31	1.02	0.758	0.985	0.92	1.12
O14 Gestational hypertension (with proteinuria)	0.014	0.056	0.26	1.01	0.798	0.985	0.91	1.13
O15 Eclampsia	-0.110	0.107	-1.03	0.90	0.301	0.905	0.73	1.10
O16 Unspecified maternal hypertension	0.035	0.037	0.94	1.04	0.348	0.905	0.96	1.11

O20 Haemorrhage in early pregnancy	0.068	0.032	2.13	1.07	0.033	0.433	1.01	1.14
O21 Excessive vomiting in pregnancy	0.008	0.068	0.11	1.01	0.911	0.985	0.88	1.15
O22 Venous complications in pregnancy	0.151	0.111	1.36	1.16	0.173	0.905	0.94	1.45
O23 Infections of genito-urinary tract in pregnancy	0.016	0.078	0.21	1.02	0.832	0.985	0.87	1.18
O24 Diabetes in pregnancy	0.003	0.053	0.07	1.00	0.948	0.985	0.90	1.11
O26 Maternal care: other conditions	0.034	0.031	1.08	1.03	0.280	0.905	0.97	1.10
O28 Abnormal findings on antenatal screening of mother	-0.110	0.145	-0.76	0.90	0.449	0.905	0.67	1.19
O30 Multiple gestation	0.026	0.049	0.52	1.03	0.603	0.969	0.93	1.13
O31 Complications specific to multiple gestation	0.228	0.235	0.97	1.26	0.333	0.905	0.79	1.99
O32 Malpresentation of foetus	-0.015	0.038	-0.41	0.98	0.685	0.985	0.91	1.06
O33 Maternal care for known or suspected disproportion	0.167	0.166	1.01	1.18	0.315	0.905	0.85	1.64
O34 Abnormality of pelvic organs	0.025	0.035	0.73	1.03	0.463	0.905	0.96	1.10
O35 Suspected foetal abnormality	0.058	0.078	0.75	1.06	0.455	0.905	0.91	1.24
O36 Other foetal problems	0.027	0.032	0.83	1.03	0.405	0.905	0.96	1.09
O40 Polyhydramnios	-0.026	0.132	-0.19	0.97	0.846	0.985	0.75	1.26
O41 Other disorders of amniotic fluid and membranes	0.073	0.079	0.92	1.08	0.355	0.905	0.92	1.25
O42 Premature rupture of membranes	0.027	0.045	0.59	1.03	0.554	0.938	0.94	1.12

O43 Placental disorders	-0.069	0.098	-0.70	0.93	0.482	0.905	0.77	1.13
O44 Placenta praevia	0.062	0.097	0.63	1.06	0.526	0.913	0.88	1.29
O45 Premature separation of placenta	0.297	0.205	1.45	1.35	0.147	0.905	0.90	2.01
O46 Antepartum haemorrhage	0.010	0.056	0.18	1.01	0.860	0.985	0.90	1.13
O47 False labor	-0.002	0.044	-0.04	1.00	0.969	0.985	0.92	1.09
O48 Prolonged pregnancy	0.048	0.044	1.08	1.05	0.281	0.905	0.96	1.14
O60 Preterm delivery	0.090	0.047	1.92	1.09	0.055	0.557	1.00	1.20
O61 Failed induction of labor	-0.078	0.110	-0.71	0.93	0.480	0.905	0.75	1.15
O62 Abnormalities of labor forces	-0.042	0.075	-0.56	0.96	0.576	0.951	0.83	1.11
O63 Long labor	0.007	0.033	0.20	1.01	0.841	0.985	0.94	1.07
O64 Obstructed labor: malpresentation	0.009	0.068	0.14	1.01	0.891	0.985	0.88	1.15
O65 Obstructed labor due to maternal pelvic abnormality	0.008	0.237	0.04	1.01	0.972	0.985	0.63	1.61
O66 Other obstructed labor	-0.012	0.075	-0.16	0.99	0.875	0.985	0.85	1.15
O67 Labor and delivery complicated by intrapartum haemorrhage	-0.090	0.141	-0.63	0.91	0.526	0.913	0.69	1.21
O68 Foetal distress	0.049	0.026	1.89	1.05	0.059	0.557	1.00	1.10
O69 Umbilical cord complications	0.041	0.056	0.72	1.04	0.470	0.905	0.93	1.16
O70 Perineal laceration	0.045	0.020	2.23	1.05	0.026	0.429	1.01	1.09
O71 Other obstetric trauma	0.062	0.091	0.68	1.06	0.494	0.905	0.89	1.27
O72 Postpartum haemorrhage	0.005	0.031	0.15	1.00	0.877	0.985	0.94	1.07
O73 Retained placenta/membranes	0.080	0.092	0.87	1.08	0.386	0.905	0.90	1.30

O74 Complications of anesthesia during labor and delivery	-0.197	0.263	-0.75	0.82	0.453	0.905	0.49	1.38
O75 Other labor complications	-0.005	0.049	-0.11	0.99	0.911	0.985	0.90	1.09
O80 Spontaneous delivery	-0.037	0.011	-3.33	0.96	0.001	0.058	0.94	0.98
O81 Forceps/vacuum delivery	-0.071	0.025	-2.84	0.93	0.005	0.149	0.89	0.98
O82 Caesarean section	-0.002	0.022	-0.10	1.00	0.916	0.985	0.96	1.04
O83 Other assisted single delivery	-0.108	0.238	-0.45	0.90	0.652	0.985	0.56	1.43
O84 Multiple delivery	-0.331	0.245	-1.36	0.72	0.175	0.905	0.44	1.16
O85 Puerperal sepsis	-0.024	0.139	-0.17	0.98	0.862	0.985	0.74	1.28
O86 Other puerperal infections	0.098	0.088	1.11	1.10	0.268	0.905	0.93	1.31
O87 Venous complications (puerperium)	0.008	0.132	0.06	1.01	0.954	0.985	0.78	1.31
O90 Complications of the puerperium	-0.065	0.082	-0.79	0.94	0.429	0.905	0.80	1.10
O91 Infections of breast associated with childbirth	0.007	0.059	0.12	1.01	0.907	0.985	0.90	1.13
O92 Other disorders of breast and lactation associated with childbirth	0.218	0.081	2.71	1.24	0.007	0.149	1.06	1.46
O98 Maternal infectious and parasitic diseases complicating pregnancy	0.079	0.157	0.50	1.08	0.616	0.969	0.80	1.47
O99 Other maternal diseases complicating pregnancy	0.028	0.031	0.90	1.03	0.367	0.905	0.97	1.09

Note. B= coefficient. SE = standard error. Z = z value. OR = odds ratio. $p < .05$. $q < .05$.

Table S5. 95% CI Width Comparison between ASD and SCZ PRS Results

ICD Outcomes	ASD CI Width	SCZ CI Width
O00 Ectopic pregnancy	0.23	0.18
O01 Hydatidiform mole	0.52	0.41
O02 Other abnormal products of conception	0.14	0.12
O03 Spontaneous abortion	0.08	0.06
O04 Medical abortion	0.11	0.09
O06 Unspecified abortion	0.23	0.18
O08 Complications following abortion and ectopic and molar pregnancy	0.77	0.61
O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium	0.72	0.52
O11 Pre-existing hypertensive disorder with superimposed proteinuria	1.70	0.97
O12 Gestational oedema and proteinuria without hypertension	0.47	0.34
O13 Gestational hypertension (no proteinuria)	0.23	0.19
O14 Gestational hypertension (with proteinuria)	0.27	0.22
O15 Eclampsia	0.70	0.38
O16 Unspecified maternal hypertension	0.19	0.15
O20 Haemorrhage in early pregnancy	0.15	0.13
O21 Excessive vomiting in pregnancy	0.37	0.27
O22 Venous complications in pregnancy	0.43	0.51
O23 Infections of genito-urinary tract in pregnancy	0.39	0.31
O24 Diabetes in pregnancy	0.24	0.21
O26 Maternal care: other conditions	0.16	0.13
O28 Abnormal findings on antenatal screening of mother	0.52	0.52
O30 Multiple gestation	0.23	0.20
O31 Complications specific to multiple gestation	1.65	1.20
O32 Malpresentation of foetus	0.18	0.15
O33 Maternal care for known or suspected disproportion	0.94	0.78
O34 Abnormality of pelvic organs	0.17	0.14
O35 Suspected foetal abnormality	0.37	0.33
O36 Other foetal problems	0.15	0.13
O40 Polyhydramnios	0.68	0.51
O41 Other disorders of amniotic fluid and membranes	0.40	0.33
O42 Premature rupture of membranes	0.21	0.18
O43 Placental disorders	0.41	0.36

O44 Placenta praevia	0.48	0.41
O45 Premature separation of placenta	1.18	1.11
O46 Antepartum haemorrhage	0.28	0.22
O47 False labor	0.24	0.17
O48 Prolonged pregnancy	0.21	0.18
O60 Preterm delivery	0.23	0.20
O61 Failed induction of labor	0.58	0.40
O62 Abnormalities of labor forces	0.37	0.28
O63 Long labor	0.17	0.13
O64 Obstructed labor: malpresentation	0.32	0.27
O65 Obstructed labor due to maternal pelvic abnormality	1.35	0.97
O66 Other obstructed labor	0.33	0.29
O67 Labor and delivery complicated by intrapartum haemorrhage	0.81	0.51
O68 Foetal distress	0.12	0.11
O69 Umbilical cord complications	0.25	0.23
O70 Perineal laceration	0.10	0.08
O71 Other obstetric trauma	0.42	0.38
O72 Postpartum haemorrhage	0.16	0.12
O73 Retained placenta/membranes	0.49	0.39
O74 Complications of anesthesia during labor and delivery	1.39	0.89
O75 Other labor complications	0.23	0.19
O80 Spontaneous delivery	0.05	0.04
O81 Forceps/vacuum delivery	0.11	0.09
O82 Caesarean section	0.11	0.09
O83 Other assisted single delivery	0.93	0.87
O84 Multiple delivery	1.07	0.71
O85 Puerperal sepsis	0.88	0.54
O86 Other puerperal infections	0.38	0.38
O87 Venous complications (puerperium)	0.55	0.53
O90 Complications of the puerperium	0.33	0.30
O91 Infections of breast associated with childbirth	0.29	0.23
O92 Other disorders of breast and lactation associated with childbirth	0.40	0.39
O98 Maternal infectious and parasitic diseases complicating pregnancy	0.80	0.68
O99 Other maternal diseases complicating pregnancy	0.15	0.12

Table S6. Poisson Regression Results for Clustered Pregnancy Groups

ICD Level 2 Group	B	SE	z value	OR	p value	q value	D
O00-08 Pregnancy with abortive outcome	0.018	0.013	1.39	1.02	0.165	0.165	1.02
O10-16 Edema, proteinuria, and hypertensive disorders in pregnancy, childbirth, and the puerperium	0.032	0.030	1.08	1.03	0.284	0.284	1.27
O20-29 Other maternal disorders predominantly related to pregnancy	0.013	0.023	0.56	1.01	0.574	0.574	1.19
O30-48 Maternal care related to the foetus and amniotic cavity and possible delivery problems	0.0045	0.016	0.27	1.00	0.784	0.784	1.64
O60-77 Complications of labour and delivery	0.026	0.013	1.95	1.03	0.0513	0.0513	1.85
O80-82 Encounter for delivery	-0.016	0.0094	-1.69	0.98	0.0910	0.0910	0.63
O85-92 Complications predominantly related to the puerperium	-0.033	0.043	-0.77	0.97	0.439	0.439	1.08
O94-9A Other obstetric conditions, not elsewhere classified	0.017	0.036	0.47	1.02	0.642	0.642	0.97

Note. B= coefficient. SE = standard error. $p < .05$. $q < .05$. D = dispersion.

Table S7. Negative Binomial Results for Overdispersed Clustered Groups

ICD Level 2 Group	B	SE	z value	OR	p value	q value
O10-16 Edema, proteinuria, and hypertensive disorders in pregnancy, childbirth, and the puerperium	0.033	0.034	0.97	1.03	0.334	0.334
O20-29 Other maternal disorders predominantly related to pregnancy	0.016	0.025	0.5663	1.02	0.529	0.529
O30-48 Maternal care related to the foetus and amniotic cavity and possible delivery problems	0.0034	0.021	0.16	1.00	0.874	0.874
O60-77 Complications of labour and delivery	0.027	0.019	1.43	1.03	0.153	0.153
O85-92 Complications predominantly related to the puerperium	-0.034	0.044	-0.77	0.97	0.441	0.441

Note. B= coefficient. SE = standard error. $p < .05$. $q < .05$.

Table S8. Generalized Poisson Regression Results for Underdispersed Clustered Groups

ICD Level 2 Group	B	SE	z value	OR	p value	q value
O80-82 Encounter for delivery	-0.016	-0.0094	-1.69	0.98	0.0910	0.0910

Note. B= coefficient. SE = standard error. $p < .05$. $q < .05$.