



# The Connecticut Birth Defects Registry

## Parental Occupations as a Predictor for Birth Defects in Connecticut

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### OBJECTIVE

- Although birth defects are a significant cause of morbidity and mortality for infants in Connecticut and in the U.S., there is still limited information about the causes of birth defects.
- Approximately 70% of birth defects the cause is unknown; known causes of birth defects include single gene mutations, chromosome abnormalities, maternal illness such as diabetes or infections and certain medications.
- Association between parental occupations and birth defects has been found in studies for certain populations but the findings are not consistent.
- In this study, we examined the association between parental occupations in relation to common birth defects in Connecticut.

### MATERIALS AND METHODS

- Data from the Connecticut Birth Defects Registry (CTBDR) for the years of 2002-2004 were used.
- Common birth defects examined in this study include atrial/ventricular septal defect (VSD), Down's syndrome (DOWN), hypospadias/Epispadias (HYPO), genitourinary obstruction (GO), patent ducts arteriosus (PDA), and congenital hip dislocation (CHD), as well as cleft palate and cleft lip (CLP), genitourinary system (CUS), and musculoskeletal system (CMD) that were examined in other studies.
- Mother's age, race, Hispanic origin, gestational age, and plurality recorded in CTBDR are reconciled with Electronic Vital Records (EVR) on the routine basis and were considered as potential risk factors.
- Parental occupations were derived from EVR and

recoded into 5 groups as professionals, clerical workers, services, workers, and housekeepers.

- Factors were evaluated individually and then considered simultaneously in the regression models, controlling for confounding.

### RESULTS

- With all the conditions examined, Down's syndrome was the only condition that was associated with parental occupations (Table 1).
- Maternal "clerical workers" was associated with the development of Down's syndrome ( $p=0.06$ ), in addition to mother's age ( $p<0.01$ ) and gestational age ( $p<0.01$ ) in the single factor analysis (Table 2).
- The association between maternal "clerical workers" and Down's syndrome became insignificant ( $OR=2.65$ ;  $0.83-8.50$ ) when mother's age and gestational age were considered in the multivariate regression model (Table 3).

### CONCLUSIONS

- We did not identify risks of certain birth defects significantly associated with parental occupations, after considering possible confounders.
- Despite findings from other studies, the association between environmental exposures using parental occupations as a surrogate and congenital anomalies remains controversial.
- Further studies are needed to uncover the underlying mechanism through better exposure assessment.

Table 1. Correlation between Parental Occupations and Selected Birth Defects, CTBDR, 2002-04

		Parental Occupations*				
		1	2	3	4	5
Mother	VSD	0.41	0.40	0.52	0.59	0.30
	DOWN	0.74	0.06	0.54	0.48	0.58
	HYPO	0.27	0.38	0.67	0.62	0.56
	GO	0.83	0.74	0.23	0.63	0.51
	PDA	0.22	0.63	0.49	0.78	0.21
	CHD	0.54	0.81	0.73	0.89	0.53
	CLP	0.61	0.26	0.63	0.48	0.98
	CUS	0.90	0.36	0.70	0.80	0.76
	CMD	0.59	0.34	0.44	0.45	0.74
	Father	VSD	0.16	0.67	0.30	0.07
DOWN		0.30	0.66	0.56	0.18	0.76
HYPO		0.87	0.77	0.14	0.19	0.71
GO		0.54	0.77	0.39	0.78	0.40
PDA		0.37	0.89	0.44	0.81	0.68
CHD		0.68	0.91	0.53	0.91	0.74
CLP		0.93	0.72	0.30	0.48	0.93
CUS		0.33	0.61	0.56	0.36	0.44
CMD		0.43	0.66	0.19	0.56	0.63

\* Parental Occupations - 1. Professionals, 2. Clerical Workers, 3. Services, 4. Workers, 5. Housekeepers.

Table 2. Results of Regression Analysis for Factors Associated with Down's Syndrome independently, CTBDR, 2002-04

		OR	95% CI	P-value
Child Sex	Male	1.08	0.51-2.31	0.84
Mother Race	White	0.45	0.11-1.92	0.28
Mother Hispanic Origin	Yes	0.34	0.08-1.45	0.15
Mother Age		1.09	1.03-1.15	<0.01
Gestation Age		1.26	1.14-1.40	<0.01
Mother as Clerical Worker	Yes	2.85	0.96-8.48	0.06

Table 3. Results of Multivariate Regression Analysis for Factors Associated with Down's Syndrome, CTBDR, 2002-04

	OR	95% CI	P-value
Mother Age	1.10	1.04-1.17	<0.01
Gestation Age	1.28	1.15-1.42	<0.01
Mother as Clerical Worker	2.65	0.83-8.50	0.10