Original article

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Risk of congenital malformations among children of construction painters in Denmark: a nationwide cohort study [1]

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[1] Supplementary tables A-F

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Table A. Occupational and industrial classification codes

	Occupational codes			Industrial codes			
	NYSTGR 1980-1990	DISCO-88 1991-2009	DISCO-08 2010	DB77 1980-1992	DB93 1993-2002	DB03 2003-2007	DB07 2008-2010
Construction painters							
	1293	1223	1323	50150	454410	454410	433410
	4593	1313	71311				
	4693	7141	9313				
	4695	9313					
Healthcare assistants							
	4606	5132	532 (not 532130)	91050	851100	851100	861000
	4607	5133		93311	851410	851410	869010
	4651			93404	853110	853110	871010
				93406	853130	853130	871020
				93407	853140	853140	872010
				93408	853150	853150	872020
					853235	853235	873010
					853240	853240	873020
					853245	853245	879010
					853255	853255	881010
							881020
							881030
Kitchen workers							
	4551	5122	512	63101	551110	551010	551010
	4651			63102	551120	551120	551020
				63109	551200	552100	552000

63201	552100	552310	559000
63202	552310	552390	561010
63209	552390	553010	561020
	553010	553020	562100
	553020	553090	562900
	553090	554010	563000
	554010	554090	
	554090	555100	
	555100	555200	
	555200		

Table B. Classification by organ system

Organ system	ICD–8	ICD–10
Any malformation	74.0–75.92, 75.96–9	Q00–89
Nervous system	74.0–3	Q00–07
Eye, ear, face and neck	74.4–5	Q10–18
Circulatory system	74.6–7	Q20–28
Respiratory	74.8	Q30–34
Oro–facial clefts	74.9	Q35–37
Digestive system	75.0–75.17, 75.189, 75.199	Q38–45
Renal	75.3	Q60–64
Genital	75.2	Q50–56
Musculoskeletal system	75.4–6, 75.18	Q65–79
Other	75.7–8, 75.90–1, 75.929, 75.96–9	Q80–89
Chromosomal	75.93–5	Q90–99

Table C. Severe malformations

Diagnosis	ICD–8–codes	ICD–10–codes
Anencephalus	74.09	Q00
Spina bifida	74.10, 74.19	Q05
Hydrocephalus	74.20	Q03
Encephalocele	74.30	Q01
Microcephalus	74.31	Q02
Other brain defect	74.32	Q04
Anoftalmi	74.40	Q11.0–1
Microftalmi	74.41	Q11.2
Heart failure	74.6	Q20–4
Circulation system	74.7	Q25–8
Lung defects	74.80, 74.83–6	Q30.0, 31.1–9, 32–33
Esophagus atresia	75.02	Q39
Ileum–, analatresia	75.11–2	Q41–42
Kidney defects	75.3	Q60–64
Limb reduction defects	75.52–4, 75.58–9	Q71–73, 74.3–9
Skeletal defects	75.60, 75.64–6	Q75, 78
Omphalocele	75.180–1	Q79.2
Diaphragmatic hernia	75.680	Q79.0
Gastrochisis	75.182	Q79.3

Situs inversus, conjoined twins, chromosomal anomalies, tuberous sclerosis	75.90–6	Q89.3–7, DQ9
Other specified syndromes	75.98	Q87

Table D. Characteristics of the children with occupationally active fathers according to paternal occupation.

	Painters		Other occupations	
	N	%	N	%
Birth year				
1980-1989	2576	29	464351	31
1990-1999	3195	35	527653	35
2000-2010	3232	36	521033	34
Maternal age[a]				
<25	2088	23	244627	16
25-29	3513	39	554591	37
30-34	2399	37	492188	33
>34	1003	11	221607	15
Paternal age				
<25	1046	12	110303	7
25-29	2847	32	415286	27
30-34	2846	32	542856	36
>34	2264	25	444592	29

[a] Information on maternal age was not available for 24 births (0.002%)

Table E. Association between maternal occupation and congenital malformations stratified by maternal age, birth year and child's sex.

	Non–events	Events	Crude		Adjusted	
	No.	No.	OR	95% CI	OR	95% CI
Maternal age[a]						
<25 years						
Occupationally active mothers	172331	7851	1 (Reference)		1 (Reference)	
Construction painters	850	23	0.59	0.39–0.90	0.61	0.40–0.92
25–29 years						
Occupationally active mothers	467728	20068	1 (Reference)		1 (Reference)	
Construction painters	1485	59	0.93	0.72–1.20	0.93	0.72–1.21
30–34 years						
Occupationally active mothers	439161	18399	1 (Reference)		1 (Reference)	
Construction painters	765	38	1.19	0.86–1.64	1.18	0.85–1.64
≥35 years						
Occupationally active mothers	198479	8727	1 (Reference)		1 (Reference)	
Construction painters	218	6	0.63	0.28–1.41	0.62	0.28–1.40
Birth year [b]						
1980–1989						
Occupationally active mothers	386697	17764	1 (Reference)		1 (Reference)	
Construction painters	609	19	0.68	0.43–1.07	0.69	0.44–1.09

1990–1999						
Occupationally active mothers	426883	16739	1 (Reference)		1 (Reference)	
Construction painters	998	42	1.08	0.79–1.47	1.07	0.78–1.46
2000–2010						
Occupationally active mothers	464119	20542	1 (Reference)		1 (Reference)	
Construction painters	1711	65	0.86	0.67–1.10	0.84	0.66–1.08
Child sex [c]						
Boys						
Occupationally active mothers	654639	30500	1 (Reference)		1 (Reference)	
Construction painters	1695	75	0.95	0.75–1.20	0.95	0.75–1.19
Girls						
Occupationally active mothers	623060	24545	1 (Reference)		1 (Reference)	
Construction painters	1623	51	0.80	0.60–1.06	0.79	0.60–1.04

[a] In a model including birth year and geographical region

[b] In a model including maternal age and geographical region

[c] In a model including birth year, maternal age and geographical region

Table F. Association between paternal occupation and congenital malformations among 1,522,040 children.

	Non–events	Events	Crude		Adjusted[a]	
	N	N	OR	95% CI	OR	95% CI
Any malformation						
Occupationally active fathers	1450509	62528	1 (Reference)		1 (Reference)	
Construction painters	8602	401	1.08	0.98–1.20	1.06	0.96–1.18
Circulatory system						
Occupationally active fathers	1500241	12796	1 (Reference)		1 (Reference)	
Construction painters	8927	76	1.00	0.70–1.25	0.99	0.79–1.25
Renal						
Occupationally active fathers	1509725	3312	1 (Reference)		1 (Reference)	
Construction painters	8980	23	1.17	0.77–1.76	1.14	0.76–1.72
Genital						
Occupationally active fathers	1504713	8324	1 (Reference)		1 (Reference)	
Construction painters	8949	54	1.09	0.83–1.43	1.07	0.82–1.40
Musculoskeletal system						
Occupationally active fathers	1486940	26097	1 (Reference)		1 (Reference)	
Construction painters	8832	171	1.10	0.95–1.28	1.08	0.93–1.26
Other malformations						
Occupationally active fathers	1508089	4948	1 (Reference)		1 (Reference)	
Construction painters	8980	23	0.78	0.52–1.18	0.79	0.53–1.20

[a] Adjusted for birth year, maternal age, paternal age, and geographical region.