

新建置婦幼相關資料庫之優點

國立成功大學醫學院公共衛生學科暨研究所
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Outlines

- Current limitations for better maternal and child health studies
- Administrative Data Based Taiwan Birth Cohort (**ADBTBC**)
- Potential contributions to life course epidemiological studies



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Current limitations for better maternal and child health studies

Examples on

Selection Bias (選樣偏差)
Information Bias (訊息偏差)
&
Confounding (干擾)



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*Concern over Representativeness of
Study Sample*



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Under revision

Perinatal and childhood risk factors for early-onset type 1 diabetes: A population-based case-control study in Taiwan

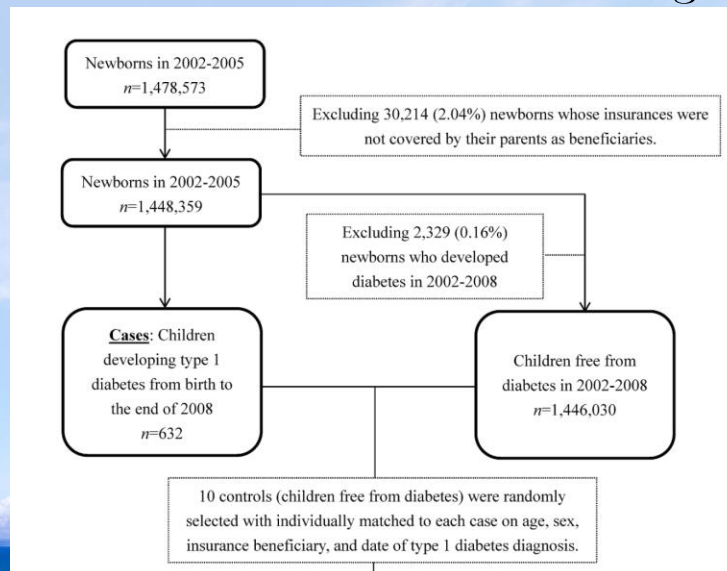
Hsin-Yu Lee¹, Chin-Li Lu^{1,2}, Hua-Fen Chen³, Chung-Yi Li^{1,4}



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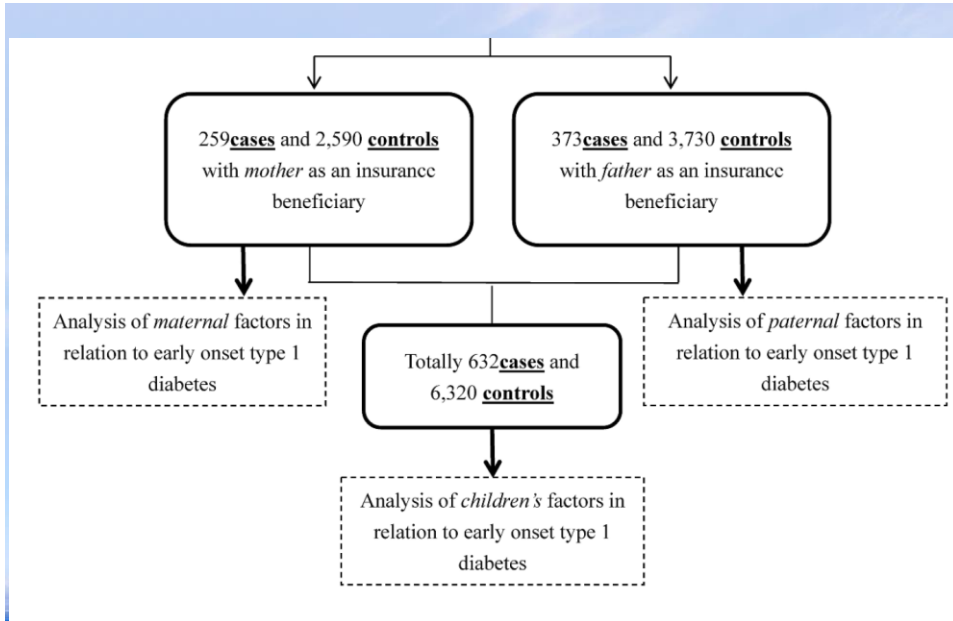
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A Nested Case-Control Design



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T1DM之潛在危險因子變項



表 8：依附父親、母親之研究對象其周產期因子分布情形

兒童危險因子	依附母親			依附父親			p-value
	病例組 (N=259)	對照組 (N=2590)	合計	病例組 (N=373)	對照組 (N=3730)	合計	
	n (%)	n(%)		n (%)	n(%)		
發病年齡(年)							
0-4	170 (65.64)	1725 (66.60)	1895	259 (69.44)	2618 (70.19)	2877	P<0.05*
5-9(參考組)	89 (34.36)	865 (33.40)	954	114 (30.56)	1112 (29.81)	1226	
平均值±標準差	4.04 ± 1.91	4.02 ± 1.94		3.97 ± 1.96	3.94 ± 1.96		
兒童性別							
男性(參考組)	134 (51.74)	1309 (50.54)	1443	186 (49.87)	1917 (51.39)	2103	P>0.05
女性	125 (48.26)	1281 (49.46)	1406	187 (50.13)	1813 (48.61)	2000	
出生體重(克)							
≥2500(參考組)	254 (98.07)	2522 (97.37)	2776	352 (94.37)	3645 (97.72)	3997	P>0.05
<2500	5 (1.93)	68 (2.63)	73	21 (5.63)	85 (2.28)	106	
懷孕週數(週)							
≥37(參考組)	250 (96.53)	2517 (97.18)	2767	354 (94.91)	3629 (97.29)	3983	P>0.05
<37	9 (3.47)	73 (2.82)	82	19 (5.09)	101 (2.71)	120	
胎兒生長發育情形							
≥2500 克，≥37 週(參考組)	250 (96.53)	2509 (96.87)	2759	351 (94.10)	3621 (97.08)	3972	P>0.05
<2500 克，≥37 週	0	8 (0.31)	8	3 (0.80)	8 (0.21)	11	
≥2500 克，<37 週	4 (1.54)	13 (0.50)	17	1 (0.27)	24 (0.64)	25	
<2500 克，<37 週	5 (1.93)	60 (2.32)	65	18 (4.83)	77 (2.06)	95	



Potential Problem of Information Bias



Prevalence of Congenital Heart Disease at Live Birth in Taiwan

Mei-Hwan Wu, MD, PhD, Hui-Chi Chen, PhD, Chun-Wei Lu, MD, Jou-Kou Wang, MD, PhD, Shin-Chung Huang, MS, and San-Kuei Huang, MD

From the health care records of the NHI database from 2000 to 2008, we selected patients who were born between 2000 and 2006 and met the criteria listed for CHD, on the basis of the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) code. To avoid an overestimation from insignificant or spontaneously resolved defects (such as small VSD, PDA, ASD, and mild PS), patients with these lesions were enrolled only when they had a CHD-specific admission or >3 outpatient clinic visits.



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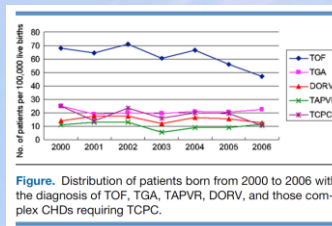


Figure. Distribution of patients born from 2000 to 2006 with the diagnosis of TOF, TGA, TAPVR, DORV, and those complex CHDs requiring TCPC.

Table I. Prevalence and the trend of congenital heart disease in Taiwan, 2000 to 2006, number per 100 000 live births

Diagnosis	Prevalence (95% CI)	P value (sex dominance)	P value (temporal trend)
Severe CHD	141.5 (135.9-147.3)	<.0001 (M)	<.0001 (D)
TOF	62.6 (58.9-66.5)	.0001 (M)	.0026 (D)
TGA	21.2 (19.1-23.5)	<.0001 (M)	NS
DORV	15.1 (13.3-17.0)	NS	NS
TAPVR	10.6 (9.1-12.2)	NS	NS
Tricuspid atresia	4.6 (3.7-5.8)	NS	NS
CCTGA	2.4 (1.7-3.3)	NS	NS
Common truncus	7.9 (6.7-9.4)	NS	.0037 (D)
Common ventricle	8.4 (7.1-9.9)	NS	NS
HLHS	6.2 (5.1-7.6)	NS	.0251 (D)
Simple CHD	1166.4 (1150.2-1182.8)	<.0001 (F)	<.0001 (D)
VSD	401.4 (391.9-411.1)	.0024 (F)	<.0001 (D)
ASDII	323.3 (314.8-332.0)	<.0001 (F)	<.0001 (D)
PDA	201.2 (194.5-208.1)	<.0001 (F)	<.0001 (D)
PS	121.8 (116.7-127.2)	NS	.0007 (D)
CoA	25.1 (22.8-27.6)	NS	NS
ECD	20.3 (18.2-22.6)	.0022 (F)	.002 (D)
AS	9.2 (7.9-10.9)	NS	.0085 (D)
Ebstein's anomaly	4.7 (3.8-5.9)	NS	NS
Cor triatriatum	1.9 (1.3-2.7)	NS	NS
All CHD	1307.9 (1290.8-1325.3)	<.0001 (F)	<.0001 (D)

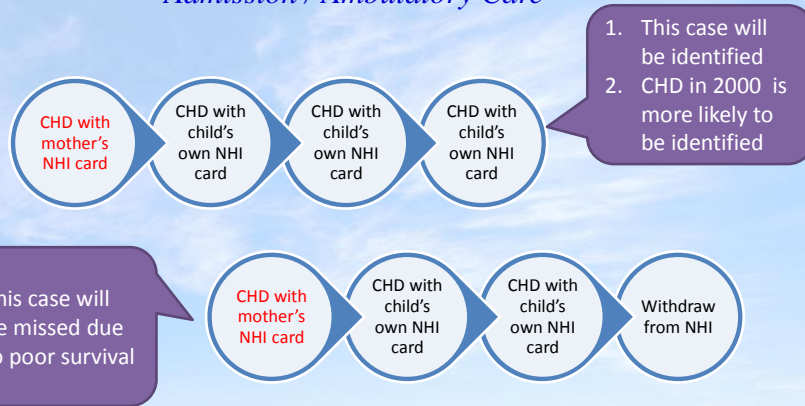


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A Scenario

Identifying CHD (ICD-code) by Date of Birth and Date of Admission / Ambulatory Care



Lack of Potential Confounders



International Journal of Epidemiology , IF=6.982 (2012)

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International Journal of Epidemiology 2013;**42**:1381–1389
doi:10.1093/ije/dyt129

EARLY LIFE

Perinatal risk factors for suicide in young adults in Taiwan

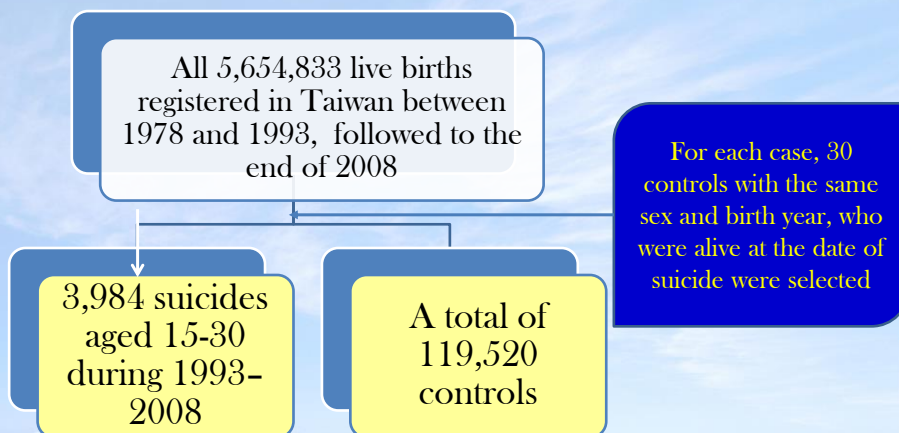
Ying-Yeh Chen,^{1,2} David Gunnell,³ Chin-Li Lu,^{4,5} Shu-Sen Chang,⁶ Tsung-Hsueh Lu⁴ and Chung-Yi Li^{4,7*}



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Study Cohort & Nested Case-control Design



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Table 2 Association between perinatal circumstances and risk of suicide

Perinatal circumstances	Total		Interaction by gender ^b P-value
	Unadjusted OR (95%CI)	Adjusted ^a OR (95%CI)	
Maternal age (years)			0.35
<20	1.54 (1.37, 1.74)***	1.65 (1.44, 1.89)***	
20–24	1.14 (1.06, 1.22)***	1.20 (1.11, 1.30)***	
25–29	1.00	1.00	
30–34	1.08 (0.97, 1.20)	1.02 (0.92, 1.14)	
≥35	1.18 (0.98, 1.43)	1.05 (0.86, 1.28)	
Married			0.12
Yes	1.00	1.00	
No	2.00 (1.69, 2.37)***	1.76 (1.31, 2.35)***	



Maternal educational attainment			0.09
>12 years	1.00	1.00	
10–12 years	1.11 (0.95, 1.29)	0.97 (0.82, 1.14)	
7–9 years	1.36 (1.17, 1.58)***	1.01 (0.84, 1.20)	
≤6 years	1.17 (1.01, 1.35)*	0.83 (0.70, 1.00)	
Paternal educational attainment			0.02
>12 years	1.00	1.00	
10–12 years	1.10 (0.98, 1.23)	1.06 (0.93, 1.21)	
7–9 years	1.28 (1.14, 1.43)***	1.21 (1.05, 1.39)**	
≤6 years	1.26 (1.14, 1.41)***	1.22 (1.06, 1.40)**	
Birth order			0.14
1	1.00	1.00	
2	1.12 (1.04, 1.21)**	1.23 (1.13, 1.33)***	
3	1.13 (1.04, 1.24)**	1.31 (1.19, 1.45)***	
4+	1.22 (1.10, 1.35)***	1.45 (1.28, 1.65)***	



Table 3 Associations between birth order and risk of suicide stratifying by sex and sibship size

Birth order	2 siblings		3 siblings		4 or more siblings	
	Male Adjusted ^a OR (95% CI)	Female Adjusted ^a OR (95% CI)	Male Adjusted ^a OR (95% CI)	Female Adjusted ^a OR (95% CI)	Male Adjusted ^a OR (95% CI)	Female Adjusted ^a OR (95% CI)
1	1.00	1.00	1.00	1.00	1.00	1.00
2	1.45 (1.24, 1.69)***	1.21 (0.96, 1.53)	1.43 (1.19, 1.71)***	1.48 (1.15, 1.90)**	1.05 (0.73, 1.51)	1.55 (1.06, 2.27)*
3	–	–	1.79 (1.48, 2.18)***	1.69 (1.27, 2.24)***	1.35 (0.96, 1.90)	1.90 (1.29, 2.79)**
4+	–	–	–	–	1.44 (1.02, 2.04)*	2.70 (1.81, 4.04)***

^aAdjusting for maternal age, maternal marital status, maternal and paternal educational attainment.

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

Main conclusion:

Early life social circumstances influence future risk of suicide.
Factors specific to Taiwanese culture, such as a preference for male offspring, may have influenced gender-specific patterns of risk.



Incomplete Consideration of Potential Confounders



- Psychological comorbidity prior to suicide
- Major illnesses
- Familial clustering of psychological illness
- Behaviors disorders



Some Other Examples with Birth and Death Registries

CMAJ

RESEARCH

Association between parity and risk of suicide among parous women

Chun-Yuh Yang PhD MPH CMAJ • APRIL 6, 2010 • 182(6)

Interpretation: This study provides evidence to support Durkheim's hypothesis that parenthood confers a protective effect against suicide.

Original Article

Death of a Son is Associated With Risk of Suicide Among Parous Women in Taiwan: A Nested Case-Control Study

Chih-Cheng Chen¹, Chien-Chun Kuo², Trong-Neng Wu^{3,5}, and Chun-Yuh Yang^{4,5}



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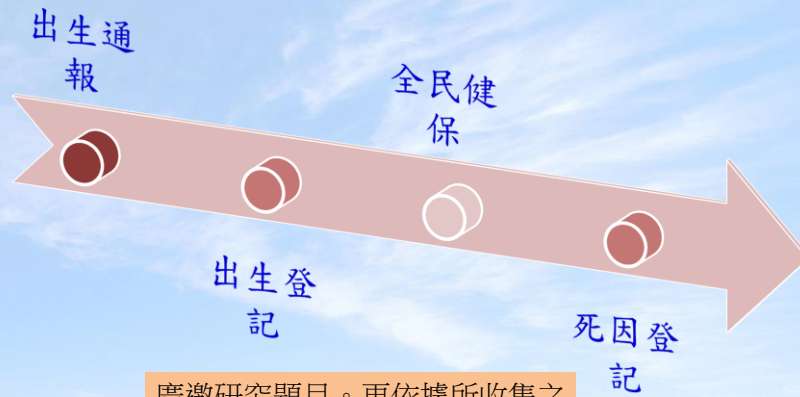
Administrative Data Based Taiwan Birth Cohort (ADBTBC)



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建置完成之婦幼主題式健康資料庫



廣邀研究題目。再依據所收集之題庫，建立幾個主題式資料庫



Potential Contributions of The ADBTBC to Life Course Epidemiological Studies



Make Long-term Follow-up Easier

- Fetal programming theory
 - Cardiovascular events in adults with low birth weight at birth
 - Trajectory of health after birth
- Inter-generational studies
 - Birth weight of mothers predicting the health outcome of children
 - Maternal illnesses predicting the health of children



Conclusion

- The proposed *“Administrative Data Based Taiwan Birth Cohort”* includes life course data, not only *from cradle to tomb*, but also *across the generations*
- A number of research hypotheses in life course epidemiology can be tested with this *“Administrative Data Based Taiwan Birth Cohort”*



Thanks

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