Supplement

e-Figure 1. Study flowchart

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┌─────────────────────────────────────┐
│ All population in Taiwan, from January 1,│
│        2000, to December 31, 2016    │
│           (N ≈ 23,000,000)           │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│ Patients receiving mental disorder diagnosis │
│ (ICD-9 code: 290.**–319.**; ICD-10 code:│
│  F01–F99) between January 1, 2000, and│
│ December 31, 2016 (N = 10,422,350)   │
└─────────────────────────────────────┘        ┌─────────────────────────────────────┐
                   │                            │ Excluding patients receiving at least one│
                   ├──────────────────────────▶│ psychiatric diagnosis of mood disorder│
                   │                            │ (ICD 9 code: 296.**) between January 1,│
                   │                            │    2000, and December 31, 2016       │
                   ▼                            │           (N = 188,902)              │
┌─────────────────────────────────────┐        └─────────────────────────────────────┘
│ Patients with a consistent diagnosis of │
│ schizophrenia (ICD-9 code: 295.**; ICD-10│
│  code: F20.*) between January 1, 2001, and│
│          December 31, 2016.          │
│ The baseline was defined as the date of first│
│      diagnosis of schizophrenia      │
│           (N = 170,322)              │
└─────────────────────────────────────┘        ┌─────────────────────────────────────┐
                   │                            │  Linking with the national mortality │
                   ├──────────────────────────▶│ database for a single cause (January 1,│
                   │                            │    2001, to December 31, 2016)       │
                   ▼                            └─────────────────────────────────────┘
┌─────────────────────────────────────┐
│ Identifying patients with all-cause mortality│
│    in the study cohort (N = 26,926)  │
└─────────────────────────────────────┘
                   │
                   ▼
┌─────────────────────────────────────┐
│ Identifying patients with sudden cardiac│
│   death in the study cohort (N = 1,836)│
└─────────────────────────────────────┘
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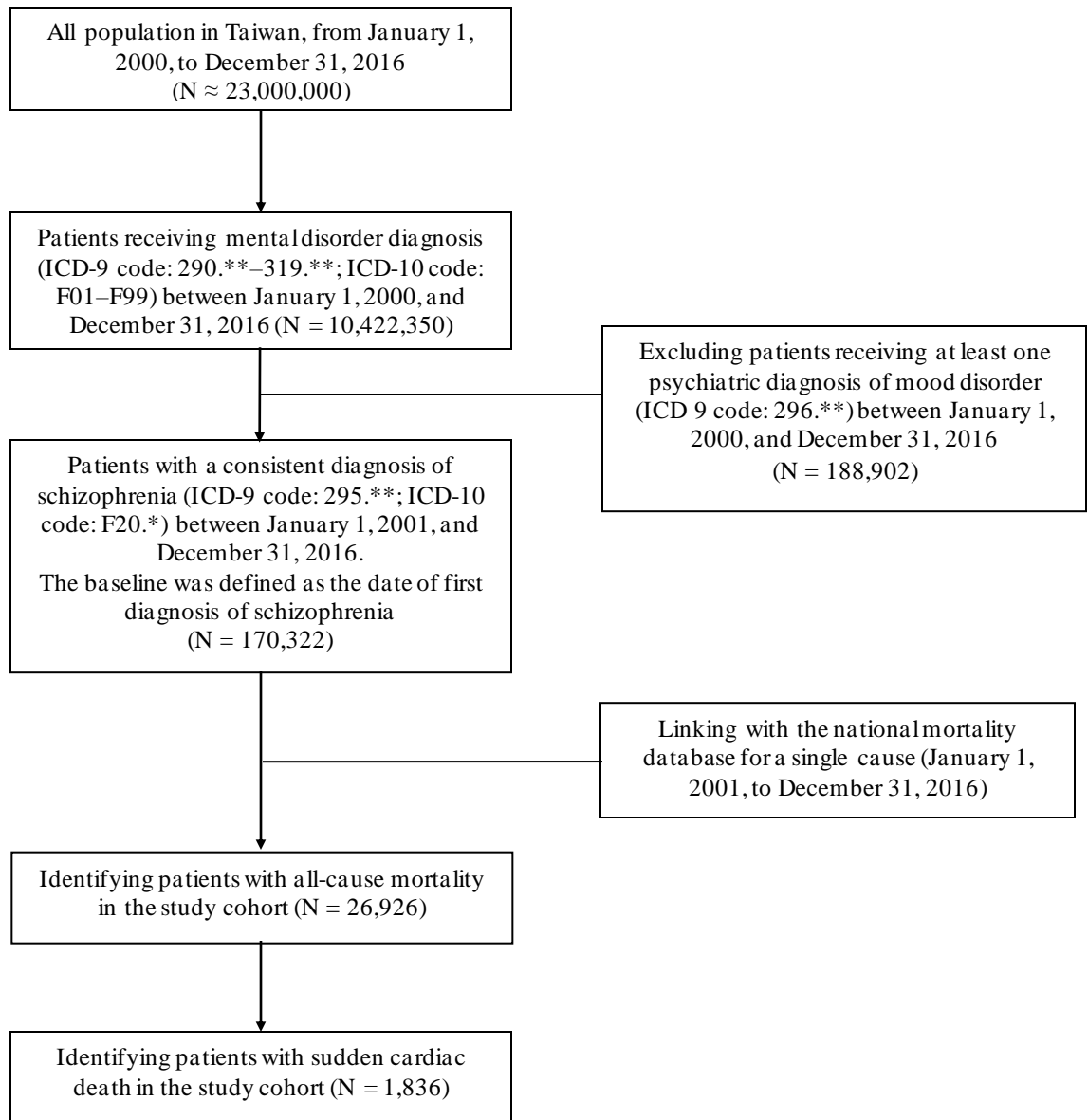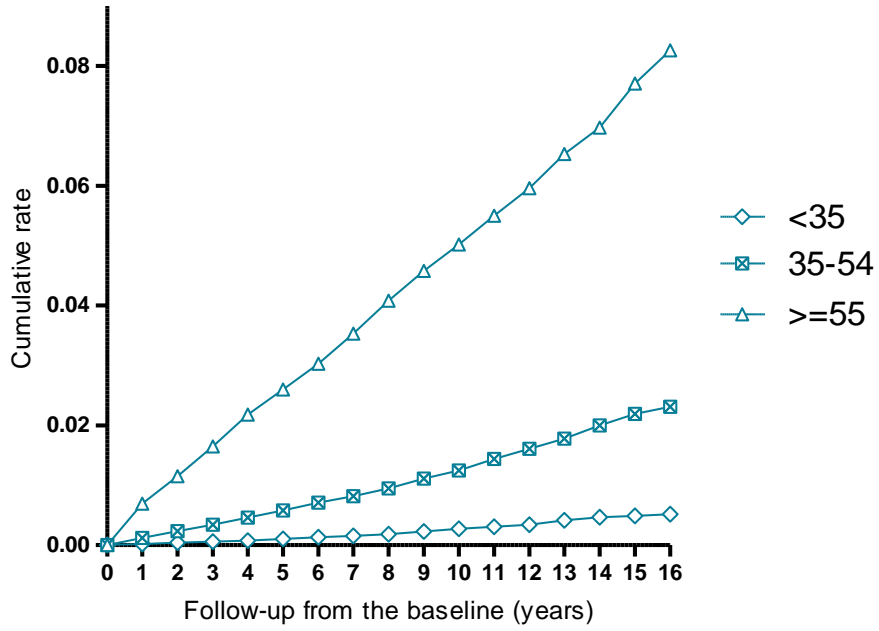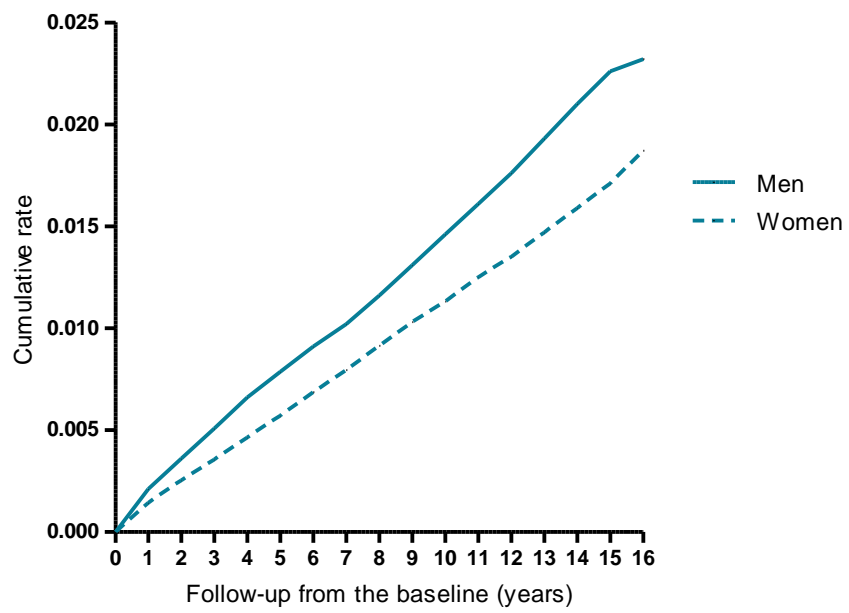
e-Figure 2. Cumulative incidence of sudden cardiac death in the schizophrenia cohort stratified by 3 age subgroups

e-Figure 3. Cumulative incidence of sudden cardiac death in the schizophrenia cohort stratified by sex. The comparison between men and women is based on Gehan's generalized Wilcoxon test through a life-table analysis ($p < 0.001$)

e-Table 1. Cox proportional hazards model of physical and psychiatric comorbidity on the risk of sudden cardiac death in patients with schizophrenia

Characteristics	Schizophrenia cohort (N=170,322)	Sudden Cardiac Death (N=1,836)	Unadjusted hazard ratio	95% CI	P	Adjusted hazard ratio [a]	95% CI	P
	N (%)	N (%)						
Physical illnesses								
Cardiovascular diseases								
Hypertension	23101 (13.6)	661 (36.0)	5.20	4.73-5.73	<.001	1.38	1.23-1.55	<.001
Ischemic heart disease	8604 (5.1)	317 (17.3)	5.11	4.52-5.77	<.001	1.30	1.13-1.49	<.001
Congestive heart failure	3849 (2.3)	204 (11.1)	8.96	7.74-10.37	<.001	2.20	1.87-2.58	<.001
Disease of artery, arteriole, and capillary	2361 (1.4)	61 (3.3)	3.10	2.40-4.00	<.001			
Disease of vein and lymphatic vessel	7273 (4.3)	97 (5.3)	1.45	1.18-1.77	<.001			
Cerebrovascular diseases	9781 (5.7)	295 (16.1)	4.70	4.15-5.33	<.001			
Metabolic diseases								
Hyperlipidemia	10834 (6.4)	186 (10.1)	2.20	1.89-2.56	<.001			
Diabetes mellitus	12685 (7.5)	265 (14.4)	3.03	2.66-3.46	<.001			
Respiratory diseases								
Chronic obstructive pulmonary disease	12038 (7.1)	261 (14.2)	2.62	2.30-2.99	<.001			
Chronic bronchitis	6813 (4.0)	172 (9.4)	3.09	2.64-3.61	<.001			
Asthma	6817 (4.0)	124 (6.8)	2.05	1.71-2.46	<.001			
Pneumonia	7020 (4.1)	147 (8.0)	3.16	2.67-3.74	<.001			
Upper respiratory tract infection	29505 (17.3)	240 (13.1)	0.70	0.61-0.80	<.001			
Others								
Chronic kidney disease	2515 (1.5)	52 (2.8)	3.91	2.96-5.15	<.001			
Chronic hepatic disease	12266 (7.2)	208 (11.3)	1.71	1.48-1.97	<.001			

Cancer	3484 (2.1)	51 (2.8)	2.13	1.61-2.81	<.001		
Connective tissue disease	2364 (1.4)	22 (1.2)	0.95	0.62-1.44	0.806		
Atopic dermatitis	2865 (1.7)	51 (2.8)	1.95	1.47-2.57	<.001		
Irritable bowel syndrome	5108 (3.0)	65 (3.5)	1.25	0.98-1.60	0.075		
Psychiatric illnesses							
Dementia and organic mental disorder	11070 (6.5)	228 (12.4)	2.45	2.13-2.82	<.001	1.43	1.24-1.64	<.001
Alcohol-induce disorder	6598 (3.9)	136 (7.4)	2.33	1.96-2.78	<.001		
Drug-induced mental disorder	6414 (3.8)	86 (4.7)	1.52	1.22-1.88	<.001	2.22	1.78-2.77	<.001
Intellectual disability	5938 (3.5)	42 (2.3)	0.68	0.50-0.92	0.013		
Anxiety disorder	37064 (21.8)	432 (23.5)	1.25	1.12-1.39	<.001		
Sleep disorder	43403 (25.5)	526 (28.7)	1.40	1.27-1.55	<.001		

[a] Adjusted for the demographic variables (including sex, age, and urbanization) and those variables with $p < 0.01$ remained in the adjusted model.

e-Table 2. Cox proportional hazards model of physical and psychiatric comorbidity on the risk of sudden cardiac death in patients with schizophrenia aged <35 years

Characteristics	Schizophrenia cohort (N=76,325)	Sudden Cardiac Death (N=198)	Unadjusted hazard ratio	95% CI	P	Adjusted hazard ratio [a]	95% CI	P
	N (%)	N (%)						
Physical illnesses								
Cardiovascular diseases								
Hypertension	1411 (1.9)	18 (9.1)	6.14	3.78-9.97	<.001	3.06	1.79-5.25	<.001
Ischemic heart disease	663 (0.9)	1 (0.5)	0.54	0.08-3.86	0.541			
Congestive heart failure	201 (0.3)	7 (3.5)	15.33	7.21-32.60	<.001	6.91	3.05-15.68	<.001
Disease of artery, arteriole, and capillary	340 (0.5)	0 (0.0)	0.00	0-2.74E+218	0.967			
Disease of vein and lymphatic vessel	2080 (2.7)	5 (2.5)	0.98	0.40-2.37	0.958			
Cerebrovascular diseases	750 (1.0)	6 (3.0)	3.14	1.39-7.08	0.006			
Metabolic diseases								
Hyperlipidemia	1300 (1.7)	9 (4.6)	3.38	1.73-6.59	<.001			
Diabetes mellitus	985 (1.3)	7 (3.5)	3.14	1.48-6.68	0.003			
Respiratory diseases								
Chronic obstructive pulmonary disease	2626 (3.4)	14 (7.1)	2.00	1.16-3.45	0.012			
Chronic bronchitis	1069 (1.4)	5 (2.5)	1.62	0.67-3.95	0.284			
Asthma	2204 (2.9)	10 (5.1)	1.84	0.97-3.47	0.061			
Pneumonia	1720 (2.3)	7 (3.5)	1.82	0.86-3.87	0.120			
Upper respiratory tract infection	14959 (19.6)	23 (11.6)	0.54	0.35-0.83	0.005			
Others								
Chronic kidney disease	149 (0.2)	1 (0.5)	3.05	0.43-21.72	0.267			
Chronic hepatic disease	3563 (4.7)	32 (16.2)	3.64	2.49-5.31	<.001	2.38	1.61-3.54	<.001

Cancer	349 (0.5)	2 (1.0)	2.37	0.59-9.54	0.225			
Connective tissue disease	558 (0.7)	1 (0.5)	0.68	0.10-4.82	0.697			
Atopic dermatitis	1178 (1.5)	1 (0.5)	0.36	0.05-2.58	0.310			
Irritable bowel syndrome	1768 (2.3)	3 (1.5)	0.66	0.21-2.05	0.470			
Psychiatric illnesses								
Dementia and organic mental disorder	3255 (4.3)	21 (10.6)	2.65	1.69-4.17	<.001			
Alcohol-induce mental disorder	2113 (2.8)	32 (16.2)	7.99	5.47-11.66	<.001			
Drug-induced mental disorder	3339 (4.4)	24 (12.1)	3.57	2.33-5.47	<.001	2.53	1.64-3.92	<.001
Intellectual disability	4041 (5.3)	9 (4.6)	0.98	0.50-1.91	0.950			
Anxiety disorder	14954 (19.6)	44 (22.2)	1.37	0.98-1.91	0.069			
Sleep disorder	15638 (20.5)	62 (31.3)	2.13	1.58-2.88	<.001	1.77	1.30-2.42	<.001

[a] Based on multivariate regression model in study subjects aged <35 years: sex, age, urbanization, employment and the variables in e-Table 2 (physical and psychiatric comorbidities) with $p < 0.01$ remained in the final adjusted model.

e-Table 3. Cox proportional hazards model of physical and psychiatric comorbidity on the risk of sudden cardiac death in patients with schizophrenia aged 35–54 years

Characteristics	Schizophrenia cohort (N=61,453) N (%)	Sudden Cardiac Death (N=665) N (%)	Unadjusted hazard ratio	95% CI	P	Adjusted hazard ratio [a]	95% CI	P
Physical illnesses								
Cardiovascular diseases								
Hypertension	7421 (12.1)	144 (21.7)	2.38	1.97-2.86	<.001	2.08	1.71-2.53	<.001
Ischemic heart disease	2441 (4.0)	49 (7.4)	1.99	1.49-2.67	<.001			
Congestive heart failure	847 (1.4)	33 (5.0)	4.58	3.23-6.50	<.001	3.02	2.09-4.37	<.001
Disease of artery, arteriole, and capillary	727 (1.2)	9 (1.4)	1.21	0.63-2.34	0.568			
Disease of vein and lymphatic vessel	2887 (4.7)	28 (4.2)	0.99	0.68-1.44	0.944			
Cerebrovascular diseases	2280 (3.7)	43 (6.5)	2.10	1.54-2.86	<.001			
Metabolic diseases								
Hyperlipidemia	4498 (7.3)	50 (7.5)	1.27	0.95-1.69	0.111			
Diabetes mellitus	4450 (7.2)	68 (10.2)	1.80	1.40-2.31	<.001			
Respiratory diseases								
Chronic obstructive pulmonary disease	3567 (5.8)	49 (7.4)	1.27	0.95-1.70	0.103			
Chronic bronchitis	2004 (3.3)	36 (5.4)	1.66	1.18-2.32	0.003			
Asthma	2075 (3.4)	28 (4.2)	1.36	0.93-1.99	0.109			
Pneumonia	1872 (3.1)	32 (4.8)	2.22	1.55-3.16	<.001			
Upper respiratory tract infection	9776 (15.9)	84 (12.6)	0.74	0.59-0.93	0.010			
Others								
Chronic kidney disease	646 (1.1)	7 (1.1)	1.46	0.70-3.08	0.317			
Chronic hepatic disease	5789 (9.4)	82 (12.3)	1.45	1.15-1.82	0.002			

Cancer	1230 (2.0)	14 (2.1)	1.42	0.84-2.42	0.191			
Connective tissue disease	903 (1.5)	3 (0.5)	0.32	0.10-0.98	0.047			
Atopic dermatitis	851 (1.4)	16 (2.4)	1.99	1.21-3.26	0.007			
Irritable bowel syndrome	1860 (3.0)	17 (2.6)	0.87	0.54-1.40	0.561			
Psychiatric illnesses								
Dementia and organic mental disorder	4018 (6.5)	75 (11.3)	2.12	1.67-2.69	<.001	1.61	1.26-2.05	<.001
Alcohol-induce mental disorder	3814 (6.2)	83 (12.5)	2.81	2.23-3.54	<.001			
Drug-induced mental disorder	2658 (4.3)	41 (6.2)	2.25	1.64-3.08	<.001	1.79	1.30-2.46	<.001
Intellectual disability	1538 (2.5)	23 (3.5)	1.62	1.07-2.46	0.023			
Anxiety disorder	14311 (23.3)	142 (21.4)	1.04	0.86-1.25	0.714			
Sleep disorder	17451 (28.4)	168 (25.3)	1.04	0.87-1.23	0.696			

[a] Based on multivariate regression model in study subjects aged 35–54 years: sex, age, urbanization, employment and the variables in e-Table 3 (physical and psychiatric comorbidities) with $p < 0.01$ remained in the final adjusted model.

e-Table 4. Cox proportional hazards model of physical and psychiatric comorbidity on the risk of sudden cardiac death in patients with schizophrenia aged ≥55 years

Characteristics	Schizophrenia cohort (N=32,544)	Sudden Cardiac Death (N=973)	Unadjusted hazard ratio	95% CI	P	Adjusted hazard ratio [a]	95% CI	P
	N (%)	N (%)						
Physical illnesses								
Cardiovascular diseases								
Hypertension	14239 (43.8)	499 (51.3)	1.71	1.50-1.93	<.001	1.31	1.14-1.50	<.001
Ischemic heart disease	5500 (16.9)	267 (27.4)	2.09	1.82-2.41	<.001	1.53	1.31-1.79	<.001
Congestive heart failure	2801 (8.6)	164 (16.9)	3.06	2.59-3.62	<.001	2.22	1.85-2.67	<.001
Disease of artery, arteriole, and capillary	1294 (4.0)	52 (5.3)	1.59	1.20-2.10	0.001			
Disease of vein and lymphatic vessel	2306 (7.1)	64 (6.6)	1.07	0.83-1.38	0.593			
Cerebrovascular diseases	6751 (20.7)	246 (25.3)	1.69	1.46-1.96	<.001			
Metabolic diseases								
Hyperlipidemia	5036 (15.5)	127 (13.1)	0.93	0.77-1.12	0.414			
Diabetes mellitus	7250 (22.3)	190 (19.5)	1.09	0.93-1.27	0.314			
Respiratory diseases								
Chronic obstructive pulmonary disease	5845 (18.0)	198 (20.4)	1.46	1.25-1.70	<.001			
Chronic bronchitis	3740 (11.5)	131 (13.5)	1.50	1.25-1.81	<.001			
Asthma	2538 (7.8)	86 (8.8)	1.43	1.14-1.78	0.002			
Pneumonia	3428 (10.5)	108 (11.1)	1.92	1.57-2.35	<.001			
Upper respiratory tract infection	4770 (14.7)	133 (13.7)	0.89	0.74-1.07	0.199			
Others								
Chronic kidney disease	1720 (5.3)	44 (4.5)	1.64	1.21-2.22	0.002			
Chronic hepatic disease	2914 (9.0)	94 (9.7)	1.07	0.87-1.33	0.527			

Cancer	1905 (5.9)	35 (3.6)	0.88	0.63-1.24	0.462			
Connective tissue disease	903 (2.8)	18 (1.9)	0.66	0.41-1.05	0.080			
Atopic dermatitis	836 (2.6)	34 (3.5)	1.71	1.21-2.41	0.002			
Irritable bowel syndrome	1480 (4.6)	45 (4.6)	1.00	0.74-1.35	0.984			
Psychiatric illnesses								
Dementia and organic mental disorder	3797 (11.7)	132 (13.6)	1.59	1.32-1.91	<.001			
Alcohol-induce mental disorder	671 (2.1)	21 (2.2)	1.12	0.72-1.72	0.619			
Drug-induced mental disorder	417 (1.3)	21 (2.2)	2.34	1.52-3.60	<.001	2.25	1.45-3.48	<.001
Intellectual disability	359 (1.1)	10 (1.0)	0.96	0.51-1.78	0.886			
Anxiety disorder	7799 (24.0)	246 (25.3)	1.10	0.96-1.28	0.160			
Sleep disorder	10314 (31.7)	296 (30.4)	1.06	0.92-1.21	0.425			

[a] Based on multivariate regression model in study subjects aged ≥55 years: sex, age, urbanization, employment and the variables in e-Table 4 (physical and psychiatric comorbidities) with $p < 0.01$ remained in the final adjusted model.