

## Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1. International Classification of Diseases (ICD) Codes for Exposure and Outcome Identification**

Diseases		ICD-8	ICD-9	ICD-10
<b>All stress-related disorder</b>		307, 308.4	309, 308	F43
	PTSD		309B	F43.1
	Acute stress reaction		309A, 308	F43.0
	Adjustment disorder		309X	F43.2
	Other stress reaction		309X	F43.8, F43.9
<b>Any psychiatric disorder</b>		290–315	290–315	F**
<b>Autoimmune diseases</b>				
<b>Disease of endocrine system</b>	Diabetes mellitus, insulin dependent	250	250	E10
	Autoimmune thyroid disease	242.00, 242.09, 244, 245.03	242A, 242X, 244W, 244X, 245C, 245W	E03.5, E03.9, E05.0, E05.5, E05.9, E06.3, E06.5
	Addison's disease	255.1	255E	E27.1, E27.2
	Autoimmune polyglandular syndrome	258.10	258B	E31.0
<b>Inflammatory arthritis</b>	Reactive arthritis (Reiter's syndrome)	099.3, 711.1	099D, 711A	M02.3, M02.8, M02.9
	Rheumatoid arthritis	712.00, 712.10, 712.20, 712.39, 712.38	714A-D, 719D	M05, M06, M08.0, M08.1, M08.2, M08.3, M08.4
	Ankylosing spondylitis	712.4	720A	M45
<b>Vasculitis</b>	Polyarteritis nodosa and related condition (Incl. Kawasaki, Churg-Strauss syndrome, etc.)	446	446A, 446B	M30
	Thrombotic microangiopathy	-	446G	M31.1
	Granulomatosis with polyangiitis (Wegeners's granulomatosis)	446.20	446E	M31.3
	Microscopic polyangiitis	-	-	M31.7
	Henoch-Schonlein purpura	287.00	287A	D69.0
	Giant cell arteritis/ Polymyalgia rheumatica	446.30, 446.31, 446.39, 717.9	446F, 725	M35.3, M31.5, M31.6
<b>Connective tissue disorders</b>	Systemic lupus erythematosus	734.1	710A	M32
	Polymyositis/dermatomyositis	716.10, 716.00	710E, 710D	M33.0, M33.1, M33.2, M33.9
	Systematic sclerosis (scleroderma)	710.0, 734.0	710B	M34
	Sjögren's syndrome	734.90	710C	M35.0
	Mixed connective tissue disease	734.98, 734.91, 734.99	710X, 710W	M35.1
	Behcet's syndrome	136.0	136B	M35.2
<b>Disease of skin system</b>	Pemphigus vulgaris	694.00	694E	L10.0
	Bullous pemphigoid	694.05	694F	L12
	Dermatitis herpetiformis	693.99	694A	L13.0
	Psoriasis	696	696A, 696B	L40
	Alopecia areata	704.00	704A	L64
	Vitiligo	709.05	709A	L80
<b>Hematological diseases</b>	Pernicious anemia	281.0	281A	D51.0
	Autoimmune hemolytic anemia	283.90, 283.92	283A	D59.0, D59.1
	Idiopathic thrombocytopenic purpura	287.3	287D	D69.3
<b>Disease of nervous system</b>	Acute disseminated encephalomyelitis	-	-	G04
	Anti-NMDA receptor encephalitis	-	-	G13.1
	Multiple sclerosis	340	340	G35
	Neuromyelitis optica and ADEM	341	341A	G36
	Guillain-Barré syndrome	354.01	357A	G61.0, G61.1, G61.8, G61.9
	Myasthenia gravis	733.0	358A	G70.0
<b>Disease of the digestive system</b>	Primary biliary cirrhosis	-	571G	K74.3
	Crohn's disease	563.00	555	K50
	Ulcerative colitis	563.10, 569.02	556	K51
	Coeliac disease	269.00, 269.98	579A	K90.0
<b>Others</b>	Acute rheumatic fever and chorea	390-392	390-392	I00, I01.0, I01.1, I01.2, I01.8, I01.9, I02.0, I02.9
	Sarcoidosis	135	135	D86
	IgA nephropaty	580,582	580,582	N00,N01,N03,N05

**eTable 2. Risk of Autoimmune Disease Among Patients With Acute Stress Reaction or Adjustment Disorder and Other Stress Reactions, Compared With Matched Unexposed Individuals**

	Acute stress reaction				Adjustment disorder and other stress reactions					
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person- years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P valu e <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person- years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P valu e <sup>b</sup>
	Exposed patients	Matched unexposed Individuals				Exposed patients	Matched unexposed Individuals			
All	3449/376.6(9.2)	24103/3990.0(6.0)	3.12 (2.80-3.43)	1.35 (1.30-1.40)						
<b>By sex</b>										
Female	2323/214.0(10.9)	16077/2237.7(7.2)	3.67 (3.21-4.12)	1.35 (1.29-1.41)	.90					.90
Male	1126/162.6(6.9)	8026/1752.3(4.6)	2.35 (1.93-2.76)	1.35 (1.26-1.44)		4303/484.8(8.9)	30196/5152.6(5.9)	3.02 (2.74-3.29)	1.37 (1.32-1.41)	
<b>By age at index date (quartiles), years</b>										
≤33	1012/140.0(7.2)	6420/1442.5(4.5)	2.78 (2.32-3.24)	1.44 (1.34-1.55)	.002					<.00 1
34-41	746/92.0(8.1)	5070/972.1(5.2)	2.90 (2.30-3.50)	1.32 (1.21-1.43)		1349/196.8(6.9)	8572/2051.3(4.2)	2.68 (2.30-3.05)	1.49 (1.40-1.58)	
42-50	882/84.8(10.4)	5992/908.1(6.6)	3.81 (3.10-4.51)	1.40 (1.30-1.51)		1034/116.3(8.9)	6675/1239.5(5.4)	3.50 (2.95-4.06)	1.48 (1.38-1.59)	
≥51	809/59.9(13.5)	6621/667.3(9.9)	3.59 (2.63-4.55)	1.21 (1.12-1.31)		982/101.8(9.7)	7483/1097.2(6.8)	2.83 (2.20-3.45)	1.23 (1.14-1.32)	
						938/69.9(13.4)	7466/764.7(9.8)	3.65 (2.76-4.54)	1.23 (1.15-1.33)	
<b>By time since index date, years</b>										
1 to <5	1165/144.9(8.0)	7761/1489.3(5.2)	2.82 (2.35-3.30)	1.33 (1.25-1.42)	.96					.11
5 to <10	1013/116.1(8.7)	7019/1221.3(5.8)	2.99 (2.43-3.54)	1.36 (1.27-1.46)		1453/170.8(8.5)	9074/1747.2(5.2)	3.31 (2.86-3.76)	1.46 (1.37-1.54)	
≥10	1271/115.6(11.0)	9323/1279.4(7.3)	3.70 (3.08-4.33)	1.36 (1.28-1.45)		1074/138.2(7.8)	7835/1447.0(5.4)	2.35 (1.87-2.83)	1.28 (1.19-1.37)	
<b>By calendar year at index date</b>										
1981-1990	616/81.7(7.5)	4543/887.7(5.1)	2.43 (1.81-3.04)	1.32 (1.21-1.45)	.89					.24
1991-2000	1262/142.3(8.9)	8880/1519.7(5.8)	3.03 (2.52-3.53)	1.36 (1.27-1.45)		1347/193.5(7.0)	10212/2112.7(4.8)	2.13 (1.74-2.51)	1.31 (1.23-1.39)	
2001-2013	1571/152.7(10.3)	10680/1582.6(6.8)	3.54 (3.02-4.07)	1.35 (1.28-1.43)		1020/110.6(9.2)	7143/1186.4(6.0)	3.20 (2.62-3.78)	1.37 (1.27-1.47)	
<b>By history of other psychiatric disorders<sup>c</sup></b>										
Yes	1123/97.3(11.5)	1548/162.9(9.5)	2.03 (1.21-2.86)	1.26 (1.09-1.46)	.03	1375/121.4(11.3)	1790/192.4(9.3)	2.02 (1.29-2.76)	1.20 (1.04-1.37)	.02

**eTable 2. Risk of Autoimmune Disease Among Patients With Acute Stress Reaction or Adjustment Disorder and Other Stress Reactions, Compared With Matched Unexposed Individuals (Continued)**

	Acute stress reaction				Adjustment disorder and other stress reactions					
	No. of autoimmune disease cases/ No. of accumulated person- years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person- years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person- years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Matched unexposed Individuals				Exposed patients	Matched unexposed Individuals			
No	2326/279.3(8.3)	22555/3827.1(5.9)	2.44 (2.09-2.78)	1.38 (1.32-1.44)		2928/363.4(8.1)	28406/4960.2(5.7)	2.33 (2.03-2.63)	1.39 (1.34-1.45)	
<b>By family history of autoimmune diseases among first-degree relatives</b>										
Yes	885/74.6(11.9)	5655/699.7(8.1)	3.78 (2.97-4.59)	1.32 (1.19-1.46)	.67	1011/86.3(11.7)	6581/818.3(8.0)	3.67 (2.92-4.41)	1.35 (1.23-1.48)	.74
No	2564/302.0(8.5)	18448/3290.3(5.6)	2.88 (2.55-3.22)	1.36 (1.30-1.42)		3292/398.5(8.3)	23615/4334.3(5.5)	2.81 (2.52-3.10)	1.37 (1.31-1.42)	
<b>By number of health care visits during the first year after study entry<sup>d</sup></b>										
0-1 time	2019/256.5(7.9)	20811/3677.4(5.7)	2.21 (1.86-2.57)	1.30 (1.23-1.36)	<.001	2466/326.6(7.6)	26297/4770.1(5.5)	2.04 (1.73-2.34)	1.29 (1.23-1.34)	.04
≥ 2 times	1430/120.2(11.9)	3292/312.6(10.5)	1.37 (0.66-2.08)	1.12 (1.02-1.24)		1837/158.2(11.6)	3899/382.5(10.2)	1.42 (0.80-2.04)	1.15 (1.06-1.25)	

<sup>a</sup> Cox models were stratified by matching identifiers (birth year and sex), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorders. The first year of follow-up was excluded for all analyses.

<sup>b</sup> P value was derived from interaction test by incorporating an interaction term to the Cox model.

<sup>c</sup> Psychiatric disorders diagnosed *before* 3 months prior to the index date (i.e., the diagnosis date of exposed patients or the diagnosis date of the index patient for matched unexposed individuals and siblings).

<sup>d</sup> Both inpatient stay and outpatient visit were included. The first month after study entry was removed from this calculation.

**eTable 3. Risk of Autoimmune Disease Among Patients With Any Stress-Related Disorder or Posttraumatic Stress Disorder, Compared With Full Siblings**

	All stress-related disorders				Posttraumatic stress disorder					
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Full siblings				Exposed patients	Full siblings			
<b>All</b>	6067/674.4(9.0)	8151/1253.6(6.5)	2.49 (2.23-2.76)	1.29 (1.24-1.35)						
<b>By sex</b>										
Female	4175/400.7(10.4)	4910/614.3(8.0)	2.43 (2.04-2.81)	1.27 (1.19-1.35)	.81	297/24.7(12.1)	265/33.5(7.9)	4.14 (2.47-5.81)	1.23 (0.95-1.59)	.06
Male	1892/273.7(6.9)	3241/639.2(5.1)	1.84 (1.49-2.20)	1.36 (1.24-1.49)		92/12.8(7.2)	174/35.6(4.9)	2.31 (0.67-3.95)	2.17 (1.36-3.45)	
<b>By age at index date (quartiles), year</b>										
≤33	1788/251.9(7.10)	1909/432.1(4.4)	2.68 (2.30-3.06)	1.44 (1.32-1.57)	<.01	111/10.1(11.0)	79/15.3(5.2)	2.51 (0.28-4.75)	2.27 (1.46-3.52)	.26
34-41	1468/173.0(8.49)	1782/301.3(5.9)	2.57 (2.06-3.09)	1.24 (1.10-1.39)		90/10.0(9.0)	106/16.3(6.5)	5.44 (3.51-7.36)	0.91 (0.55-1.49)	
42-50	1524/152.1(10.0)	2177/300.5(7.2)	2.77 (2.18-3.36)	1.21 (1.09-1.35)		96/9.4(10.2)	127/18.1(7.0)	3.20 (0.82-5.58)	1.79 (1.16-2.78)	
≥51	1287/97.4(13.2)	2283/219.6(10.4)	2.82 (1.98-3.66)	1.15 (1.04-1.28)		92/6.1(15.2)	127/14.0(9.1)	6.13 (2.65-9.62)	1.43 (1.25-1.65)	
<b>By time since index date, years</b>										
1 to <5	2068/248.4(8.3)	2236/420.6(5.3)	3.00 (2.58-3.43)	1.33 (1.24-1.43)	.27	148/14.7(10.1)	117/24.9(4.7)	5.36 (3.53-7.19)	1.49 (1.08-2.05)	.58
5 to <10	1630/198.8(8.2)	2102/361.4(5.8)	2.38 (1.91-2.85)	1.31 (1.21-1.42)		98/10.9(9.0)	114/20.0(5.7)	3.28 (1.21-5.36)	1.33 (0.95-1.85)	
≥10	2369/227.2(10.4)	3813/471.6(8.1)	2.34 (1.85-2.83)	1.26 (1.18-1.34)		143/11.8(12.1)	208/24.2(8.6)	3.52 (1.22-5.83)	1.32 (1.00-1.74)	
<b>By calendar year at index date</b>										
1981-1990	1517/212.0(7.2)	2563/449.9(5.7)	1.46 (1.04-1.88)	1.25 (1.15-1.35)	0.07	83/10.0(8.0)	122/20.3(6.0)	2.27 (0.20-4.35)	1.25 (0.89-1.78)	.17
1991-2000	1780/199.0(8.9)	2594/390.5(6.6)	2.30 (1.81-2.79)	1.28 (1.19-1.38)		111/11.7(9.5)	151/23.6(6.4)	3.13 (1.09-5.17)	1.33 (0.98-1.80)	
2001-2013	2770/263.5(10.5)	2994/413.2(7.3)	3.27 (2.80-3.74)	1.34 (1.25-1.42)		195/15.7(12.4)	166/25.1(6.6)	5.78 (3.77-7.79)	1.52 (1.15-2.00)	
<b>By history of other psychiatric disorders<sup>c</sup></b>										
Yes	2004/172.5(11.6)	904/94.1(9.6)	2.01 (1.21-2.82)	1.05 (0.88-1.25)	.17	140/11.9(11.8)	49/5.2(9.5)	2.30 (-1.0-5.60)	1.18 (0.53-2.63)	.65

**eTable 3. Risk of Autoimmune Disease Among Patients With Any Stress-Related Disorder or Posttraumatic Stress Disorder, Compared With Full Siblings (Continued)**

	All stress-related disorders				Posttraumatic stress disorder					
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Full siblings				Exposed patients	Full siblings			
No	4063/501.9(8.1)	7247/1159.5(6.3)	1.84 (1.56-2.13)	1.31 (1.25-1.37)						
<b>By family history of autoimmune diseases among first-degree relatives</b>										
Yes	1495/125.8(11.9)	2069/243.0(8.5)	3.37 (2.66-4.08)	1.29 (1.19-1.39)						
No	4572/548.6(8.3)	6082/1010.6(6.0)	2.32 (2.03-2.60)	1.30 (1.24-1.36)	.97	105/7.7(13.7)	108/14.6(7.4)	6.31 (3.34-9.29)	1.50 (1.06-2.11)	.37
<b>By number of health care visits during the first year after study entry<sup>d</sup></b>										
0-1 time	3406/447.9(7.6)	6910/1142.9(6.1)	1.56 (1.27-1.85)	1.23 (1.17-1.30)		181/20.9(8.7)	363/62.3(5.8)	2.85 (1.45-4.25)	1.40 (1.11-1.77)	
≥ 2 times	2661/226.6(11.8)	1241/110.7(11.2)	0.54 (-0.23-1.30)	1.01 (0.89-1.15)	.12	208/16.6(12.6)	76/6.8(11.2)	1.33 (-1.7-4.38)	1.23 (0.74-2.04)	.93

<sup>a</sup> Cox models were stratified by family identifier, and adjusted for sex, age at study entry, education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorders. The first year of follow-up was excluded for all analyses.

<sup>b</sup> P value was derived from interaction test by incorporating an interaction term to the Cox model.

<sup>c</sup> Psychiatric disorders diagnosed *before* 3 months prior to the index date (i.e., the diagnosis date of exposed patients or the diagnosis date of the index patient for matched unexposed individuals and siblings).

<sup>d</sup> Both inpatient stay and outpatient visit were included. The first month after study entry was removed from this calculation.

**eTable 4. Risk of Autoimmune Disease Among Patients With Acute Stress Reaction or Adjustment Disorder and Other Stress Reactions, Compared With Full Siblings**

	Acute stress reaction				Adjustment disorder and other stress reactions					
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference, per 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Full siblings				Exposed patients	Full siblings			
<b>All</b>	2531/278.2(9.1)	3415/513.8(6.7)	2.45 (2.03-2.87)	1.31 (1.23-1.40)		3147/358.8(8.8)	4297/670.8(6.4)	2.36 (2.00-2.73)	1.27 (1.20-1.34)	
<b>By sex</b>										
Female	1685/157.4(10.7)	2081/252.7(8.2)	2.47 (1.85-3.09)	1.33 (1.20-1.47)	.70	2193/218.7(10.0)	2564/328.2(7.8)	2.22 (1.70-2.73)	1.24 (1.13-1.35)	.98
Male	846/120.8(7.0)	1334/261.1(5.1)	1.89 (1.35-2.44)	1.33 (1.16-1.54)		954/140.2(6.8)	1733/342.6(5.1)	1.75 (1.25-2.24)	1.34 (1.18-1.53)	
<b>By age at index date (quartiles), year</b>										
≤33	709/98.3(7.2)	746/162.1(4.6)	2.61 (1.99-3.24)	1.43 (1.25-1.65)	.01	968/141.7(6.8)	1084/249.5(4.4)	2.49 (1.99-2.99)	1.40 (1.24-1.57)	.002
34-41	585/71.9(8.1)	729/124.7(5.8)	2.30 (1.51-3.08)	1.21 (1.01-1.46)		793/91.1(8.7)	947/160.3(5.9)	2.79 (2.08-3.51)	1.33 (1.13-1.56)	
42-50	691/66.1(10.5)	913/129.1(7.1)	3.38 (2.48-4.29)	1.42 (1.21-1.68)		737/76.7(9.6)	1137/153.3(7.4)	2.20 (1.38-3.02)	1.07 (0.92-1.25)	
≥51	546/42.0(13.0)	1027/97.9(10.5)	2.52 (1.25-3.78)	1.15 (0.99-1.34)		92/6.1(15.2)	127/14.010(9.1)	2.66 (1.48-3.85)	1.10 (0.95-1.27)	
<b>By time since index date, years</b>										
1 to <5	854/106.7(8.0)	955/180.4(5.3)	2.70 (2.07-3.34)	1.31 (1.18-1.47)	.16	1066/127.0(8.4)	1164/215.3(5.4)	2.99 (2.39-3.58)	1.33 (1.20-1.47)	.32
5 to <10	735/85.3(8.6)	941/155.3(6.1)	2.56 (1.83-3.30)	1.40 (1.24-1.58)		797/102.7(7.8)	1047/186.2(5.6)	2.14 (1.50-2.78)	1.23 (1.09-1.37)	
≥10	942/86.2(10.9)	1519/178.1(8.5)	2.39 (1.58-3.21)	1.25 (1.13-1.38)		1284/129.1(9.9)	2086/269.3(7.8)	2.20 (1.56-2.83)	1.26 (1.16-1.38)	
<b>By calendar year at index date</b>										
1981-1990	451/60.9(7.4)	795/130.4(6.1)	1.31 (0.51-2.12)	1.20 (1.04-1.37)	.08	983/141.1(6.97)	1646/299.2(5.5)	1.47 (0.96-1.98)	1.28 (1.16-1.41)	.76
1991-2000	946/105.5(9.0)	1399/207.7(6.7)	2.23 (1.56-2.90)	1.29 (1.16-1.42)		723/81.8(8.9)	1044/159.1(6.6)	2.28 (1.52-3.03)	1.25 (1.11-1.41)	
2001-2013	1134/111.8(10.1)	1221/175.6(7.0)	3.19 (2.48-3.90)	1.40 (1.27-1.55)		1441/135.9(10.6)	1607/212.5(7.6)	3.04 (2.38-3.70)	1.27 (1.17-1.39)	
<b>By history of other psychiatric disorders<sup>c</sup></b>										
Yes	835/71.0(11.8)	371/39.6(9.4)	2.39 (1.14-3.63)	1.17 (0.90-1.52)	.42	1029/89.6(11.5)	484/49.4(9.8)	1.68 (0.56-2.80)	0.94 (0.73-1.22)	.02
No	1696/207.2(8.2)	3044/474.2(6.4)	1.77 (1.31-2.22)	1.28 (1.19-1.38)		2118/269.2(7.9)	3813/621.4(6.1)	1.73 (1.34-2.12)	1.31 (1.23-1.40)	

**eTable 4. Risk of Autoimmune Disease Among Patients With Acute Stress Reaction or Adjustment Disorder and Other Stress Reactions, Compared With Full Siblings (Continued)**

	Acute stress reaction				Adjustment disorder and other stress reactions					
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Full siblings				Exposed patients	Full siblings			
<b>By family history of autoimmune diseases among first-degree relatives</b>										
Yes	652/54.4(12.0)	903/107.3(8.4)	3.58 (2.50-4.65)	1.35 (1.20-1.53)	.62	738/63.8(11.6)	1058/121.1(8.7)	2.84 (1.85-3.82)	1.20 (1.07-1.35)	.39
No	1879/223.8(8.4)	2512/406.4(6.2)	2.21 (1.76-2.66)	1.30 (1.21-1.40)		2409/295.1(8.2)	3239/549.7(5.9)	2.27 (1.89-2.66)	1.29 (1.21-1.38)	
<b>By number of health care visits during the first year after study entry<sup>d</sup></b>										
0-1 time	1469/187.9(7.8)	2898/466.1(6.2)	1.60 (1.14-2.06)	1.23 (1.13-1.33)	.44	1756/239.1(7.3)	3649/614.5(5.9)	1.41 (1.01-1.80)	1.22 (1.13-1.31)	.12
≥ 2 times	1062/90.3(11.8)	517/47.7(10.9)	0.92 (-.26-2.09)	1.08 (0.87-1.33)		1391/119.7(11.6)	648/56.3(11.5)	0.11 (-.97-1.18)	0.93 (0.77-1.11)	

<sup>a</sup> Cox models were stratified by family identifier, and adjusted for sex, age at study entry, education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorders. The first year of follow-up was excluded for all analyses.

<sup>b</sup> P value was derived from interaction test by incorporating an interaction term to the Cox model.

<sup>c</sup> Psychiatric disorders diagnosed *before* 3 months prior to the index date (i.e., the diagnosis date of exposed patients or the diagnosis date of the index patient for matched unexposed individuals and siblings)

<sup>d</sup> Both inpatient stay and outpatient visit were included. The first month after study entry was removed from this calculation.



**eTable 5. Risk of Autoimmune Disease Among Patients With Acute Stress Reaction or Adjustment Disorder and Other Stress Reactions by Psychiatric Care Indicators, Compared With Matched Unexposed Individuals**

Indicators of psychiatric care	Acute stress reaction				Adjustment disorder and other stress reactions					
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Matched unexposed Individuals				Exposed patients	Matched unexposed Individuals			
<b>Psychiatric comorbidity<sup>c</sup></b>										
Yes	691/74.1(9.3)	4712/795.6(5.9)	3.40 (2.68-4.11)	1.56 (1.44-1.70)	<.001	1292/177.3(7.3)	9834/1886.0(5.2)	2.07 (1.66-2.48)	1.39 (1.31-1.47)	.61
No	2758/302.5(9.1)	19391/3194.4(6.1)	3.05 (2.70-3.40)	1.30 (1.25-1.36)	1	3011/307.5(9.8)	20362/3266.6(6.2)	3.56 (3.20-3.92)	1.36 (1.30-1.42)	
<b>Type of psychiatric care<sup>d</sup> (for patients diagnosed after 2000)</b>										
Both inpatient and outpatient	125/10.7(11.7)	766/112.6(6.8)	4.92 (2.81-7.03)	1.39 (1.13-1.71)	.11	65/5.9(11.0)	410/61.4(6.7)	4.36 (1.60-7.12)	1.49 (1.11-2.00)	.77
Inpatient only	436/39.5(11.0)	2770/418.7(6.6)	4.42 (3.36-5.49)	1.47 (1.32-1.65)		318/28.4(11.2)	2196/301.4(7.3)	3.93 (2.66-5.20)	1.33 (1.17-1.51)	
Outpatient only	1010/102.5(9.9)	7144/1051.2(6.8)	3.06 (2.43-3.69)	1.30 (1.21-1.39)		1553/146.4(10.6)	10235/1490.7(6.9)	3.74 (3.20-4.28)	1.41 (1.33-1.49)	
<b>Total days of inpatient stay<sup>d</sup> (for patients received any inpatient care, by tertiles)</b>										
1-4 days	1321/151.5(8.7)	9236/1605.1(5.8)	2.97 (2.48-3.45)	1.36 (1.27-1.44)	.95	1233/154.4(8.0)	9115/1663.8(5.5)	2.51 (2.05-2.97)	1.30 (1.22-1.39)	.39
5-12 days	594/67.3(8.8)	4099/722.9(5.7)	3.16 (2.43-3.89)	1.40 (1.28-1.54)		697/83.9(8.3)	5010/907.0(5.5)	2.78 (2.15-3.42)	1.36 (1.25-1.49)	
>12 days	523/55.3(9.5)	3616/609.5(5.9)	3.53 (2.70-4.37)	1.37 (1.24-1.52)		819/100.0(8.2)	5833/1090.7(5.4)	2.84 (2.26-3.42)	1.38 (1.27-1.50)	
<b>Frequency of outpatient visits<sup>d</sup> (for patients received outpatient care alone)</b>										
<3 times	901/91.0(9.9)	6385/935.4(6.8)	3.07 (2.40-3.74)	1.31 (1.21-1.41)	.56	1258/119.5(10.5)	8424/1217.8(6.9)	3.61 (3.01-4.21)	1.39 (1.31-1.48)	.27
≥3 times	110/11.6(9.5)	767/117.1(6.6)	2.97 (1.13-4.81)	1.26 (1.02-1.55)		296/26.9(11.0)	1814/273.3(6.6)	4.36 (3.07-5.65)	1.50 (1.31-1.70)	
<b>Use of selective serotonin reuptake inhibitors within the first year after diagnosis<sup>e</sup></b>										
<u>Dose level</u> <u>Duration, days (by tertiles)</u>										
No medication	457/50.1(9.1)	3522/517.2(6.8)	2.32 (1.45-3.18)	1.18 (1.07-1.31)	.64 <sup>f</sup>	645/59.1(10.9)	4241/603.2(7.0)	3.88 (3.01-4.75)	1.42 (1.30-1.55)	.41 <sup>f</sup>
Low dose ≤179	6/1.3(4.7)	97/13.0(7.5)	-2.8 (-6.9-1.20)	0.58 (0.25-1.34)		13/1.6(8.1)	116/16.0(7.2)	0.88 (-3.7-5.49)	1.12 (0.62-1.99)	
(≤1.0 DDD/day) 180-319	38/3.0(12.8)	213/30.5(7.0)	5.76 (1.60-9.92)	1.59 (1.10-2.30)		54/3.9(13.8)	268/40.1(6.7)	7.11 (3.34-10.9)	2.12 (1.51-2.97)	
≥320	44/2.9(15.0)	204/30.0(6.8)	8.19 (3.66-12.7)	2.07 (1.45-2.94)		59/4.2(13.9)	334/43.7(7.6)	6.30 (2.65-9.94)	1.70 (1.25-2.30)	

**eTable 5. Risk of Autoimmune Disease Among Patients With Acute Stress Reaction or Adjustment Disorder and Other Stress Reactions by Psychiatric Care Indicators, Compared to Matched Unexposed Individuals (Continued)**

Indicators of psychiatric care	Acute stress reaction					Adjustment disorder and other stress reactions				
	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>	P value <sup>b</sup>
	Exposed patients	Matched unexposed Individuals				Exposed patients	Matched unexposed Individuals			
High dose (≤179 DDD/day)	41/2.7(15.2)	198/28.3(7.0)	8.23 (3.47-13.0)	1.85 (1.26-2.72)		41/3.2(12.9)	238/33.2(7.2)	5.72 (1.67-9.77)	1.42 (0.98-2.06)	
(>1.0 DDD/day)	56/4.8(11.7)	336/49.3(6.8)	4.89 (1.74-8.04)	1.44 (1.06-1.97)		94/7.5(12.6)	544/75.6(7.2)	5.39 (2.77-8.00)	1.42 (1.11-1.82)	
	56/4.6(12.1)	324/47.7(6.8)	5.27 (2.02-8.51)	1.66 (1.25-2.22)		83/6.4(12.9)	476/65.2(7.3)	5.64 (2.78-8.50)	1.73 (1.36-2.19)	

DDD, Defined Daily Dose: defined by the World Health Organization as ‘the assumed average maintenance dose per day for a drug used for its main indication in adults’. DDD for selective serotonin reuptake inhibitors can be found at [https://www.whocc.no/atc\\_ddd\\_index/?showdescription=yes&code=N06AB](https://www.whocc.no/atc_ddd_index/?showdescription=yes&code=N06AB).

<sup>a</sup> Cox regression models were stratified by matching identifiers (birth year and sex), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorders. The first year of follow-up was excluded for all analyses.

<sup>b</sup> For nominal variables (i.e., psychiatric comorbidity, type of psychiatric care), P value for subgroup difference was derived from the Wald test. For ordinal variables (i.e., total days of inpatient stay, frequency of outpatient visits, and duration of the selective serotonin reuptake inhibitors use), P value for trend was derived from Wald test to test the potential dose-response relationship.

<sup>c</sup> Psychiatric disorders (other than stress-related disorders) diagnosed *from* 3 months before *to* 1 year after the diagnosis of stress-related disorders.

<sup>d</sup> Psychiatric care (i.e., inpatient or outpatient visit with any stress-related disorder as main diagnosis) received within 1 year after the stress-related disorder diagnosis, according to information from the National Patient Register.

<sup>e</sup> Only for patients diagnosed after July 1 2005. Dose and duration was calculated according to the records from the Drug Prescription Register.

<sup>f</sup> P value was calculated for different duration groups (≤179, 180-319, and ≥320 days) among drug users, irrespective of dosage level.

**eTable 6. Association of Stress-Related Disorders With Subsequent Autoimmune Disease, Additionally Adjusted for the Number of Health Care Visits During the First Year After Study Entry, Analysis of the Population-Matched Cohort**

	No. of autoimmune disease cases/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person-years (95% CI)	Hazard ratio (95% CI) <sup>b</sup>
	Exposed patients	Matched exposed individuals		
All stress-related disorders	8284/911.7(9.1)	57711/9675.7(6.0)	3.12 (2.92-3.32)	1.28 (1.25-1.31)
Posttraumatic stress disorder	532/50.3(10.6)	3412/533.1(6.4)	4.18 (3.25-5.10)	1.31 (1.18-1.46)
Acute stress reaction	3449/376.6(9.2)	24103/3990.0(6.0)	3.12 (2.80-3.43)	1.27 (1.22-1.32)
Adjustment disorders and other stress reactions	4303/484.8(8.9)	30196/5152.6(5.9)	3.02 (2.74-3.29)	1.29 (1.24-1.33)

<sup>a</sup> Both inpatient stay and outpatient visit were included. The first month after study entry was removed from this calculation.

<sup>b</sup> Cox models were stratified by matching identifiers (birth year and sex), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, history of other psychiatric disorders, and the frequency of health care visits during first year after study entry (as continuous variable). The first year of follow-up was excluded for all analyses.

**eTable 7. Association of Stress-Related Disorders With Subsequent Autoimmune Disease, Using Altered Definition for History of Other Psychiatric Disorders (One of Covariates) and Autoimmune Disease (Outcome), Analysis of the Population-Matched Cohort**

Definitions		No. of autoimmune disease cases/ No. of accumulated person- years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1 000 person- years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>
		Exposed patients	Matched exposed individuals		
<b><i>For history of other psychiatric disorder</i></b>					
Prior to 180 days before study entry	All stress-related disorders	8284/911.7(9.1)	57711/9675.7(6.0)	3.12 (2.99- 3.25)	1.37 (1.34- 1.41)
	Posttraumatic stress disorder	532/50.3(10.6)	3412/533.1(6.4)	4.18 (4.14- 4.21)	1.46 (1.32- 1.62)
	Acute stress reaction	3449/376.6(9.2)	24103/3990.0(6.0)	3.12 (2.80- 3.43)	1.36 (1.31- 1.41)
	Adjustment disorders and other stress reactions	4303/484.8(8.9)	30196/5152.6(5.9)	3.02 (2.74- 3.29)	1.38 (1.33- 1.43)
<b><i>For autoimmune diseases</i></b>					
At least two times of identical diagnosis	All stress-related disorders	4844/930.3(5.2)	35608/9791.1(3.6)	1.57 (1.42- 1.72)	1.30 (1.25- 1.34)
	Posttraumatic stress disorder	303/51.4(5.9)	2071/539.8(3.8)	2.06 (1.38- 2.75)	1.45 (1.27- 1.66)
	Acute stress reaction	2019/384.1(5.3)	14916/4036.2(3.7)	1.56 (1.32- 1.80)	1.27 (1.21- 1.34)
	Adjustment disorders and other stress reactions	2522/494.8(5.1)	18621/5215.1(3.6)	1.53 (1.32- 1.73)	1.30 (1.24- 1.36)
Only main diagnosis of inpatient stay	All stress-related disorders	1477/951.3(1.6)	9396/9958.5(0.9)	0.61 (0.53- 0.69)	1.41 (1.33- 1.49)
	Posttraumatic stress disorder	105/52.7(2.0)	541/549.0(1.0)	1.01 (0.62- 1.40)	1.89 (1.50- 2.39)
	Acute stress reaction	603/393.4(1.5)	3671/4109.1(0.9)	0.64 (0.51- 0.77)	1.44 (1.31- 1.58)
	Adjustment disorders and other stress reactions	769/505.2(1.5)	5184/5300.3(1.0)	0.54 (0.43- 0.65)	1.34 (1.23- 1.45)

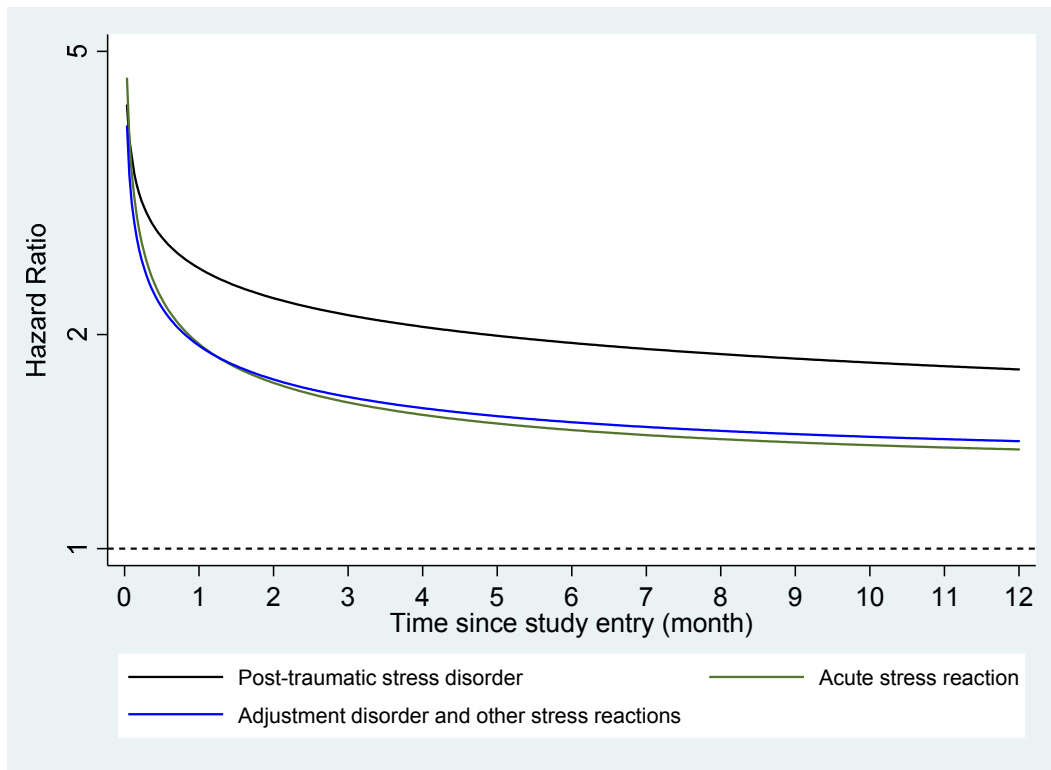
<sup>a</sup> Cox models were stratified by matching identifier (birth year and sex), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorders (defined as stated above, or otherwise as psychiatric disorders, other than stress-related disorders, diagnosed at least 90 days before study entry). The first year of follow-up was excluded.

**eTable 8. Association of Stress-Related Disorders With Subsequent Autoimmune Disease, Using Different Lag-Time, Analysis of the Population-Matched Cohort**

Lag time		No. of autoimmune disease cases/ No. of accumulated person- years×1 000 (incidence rate/ 1 000 person-years)		Absolute rate difference/ 1,000 person- years (95% CI)	Hazard ratio (95% CI) <sup>a</sup>
		Exposed patients	Matched exposed individuals		
2-years after study entry was excluded	All stress-related disorders	7455/817.5(9.1)	52727/8717.3(6.1)	3.07 (2.86- 3.28)	1.35 (1.32- 1.39)
	Posttraumatic stress disorder	467/44.5(10.5)	3117/474.2(6.6)	3.92 (2.94- 4.90)	1.44 (1.30- 1.61)
	Acute stress reaction	3123/335.6(9.3)	21925/3572.3(6.1)	3.17 (2.83- 3.50)	1.35 (1.30- 1.41)
	Adjustment disorders and other stress reactions	3865/437.4(8.8)	27685/4670.9(5.9)	2.91 (2.62- 3.20)	1.35 (1.30- 1.40)
5-years after study entry was excluded	All stress-related disorders	5462/575.8(9.5)	39781/6231.7(6.4)	3.10 (2.84- 3.36)	1.34 (1.30- 1.39)
	Posttraumatic stress disorder	328/30.2(10.9)	2317/327.5(7.1)	3.77 (2.57- 4.98)	1.42 (1.25- 1.60)
	Acute stress reaction	2284/231.6(9.9)	16342/2499.8(6.5)	3.32 (2.91- 3.74)	1.36 (1.30- 1.43)
	Adjustment disorders and other stress reactions	2850/313.9(9.1)	21122/3404.4(6.2)	2.87 (2.53- 3.22)	1.32 (1.27- 1.38)

<sup>a</sup> Cox models were stratified by matching identifiers (birth year and sex), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorders. The first year after study entry was excluded.

**eFigure 1. Hazard Ratios of Autoimmune Disease Within the First Year of Study Entry, Analysis of the Population-Matched Cohort**



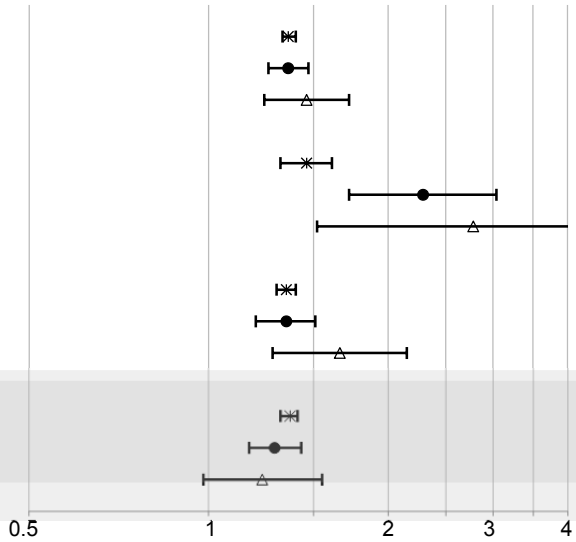
<sup>a</sup> Hazard ratios were estimated from flexible parametric survival models, allowing the effect of stress-related disorder diagnosis to vary over time. A spline with 5 df (4 intermediate knots and 2 knots at each boundary, placed at quintiles of distribution of events) was used for the baseline rate, while 3 df was used for the time-varying effect. All models were stratified by matching identifiers (birth year and sex), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorder.

The analyses were based on 6 607 exposed patients and 66 070 matched unexposed individuals for posttraumatic stress disorder, 46 693 exposed patients and 466 930 matched unexposed individuals for acute stress reaction, 53 164 exposed patients and 531 640 matched unexposed individuals for adjustment disorder and other stress reactions.

**eFigure 2. Associations Between Stress-Related Disorders and Multiple Autoimmune Syndrome (MAS), Analysis of the Population-Matched Cohort**

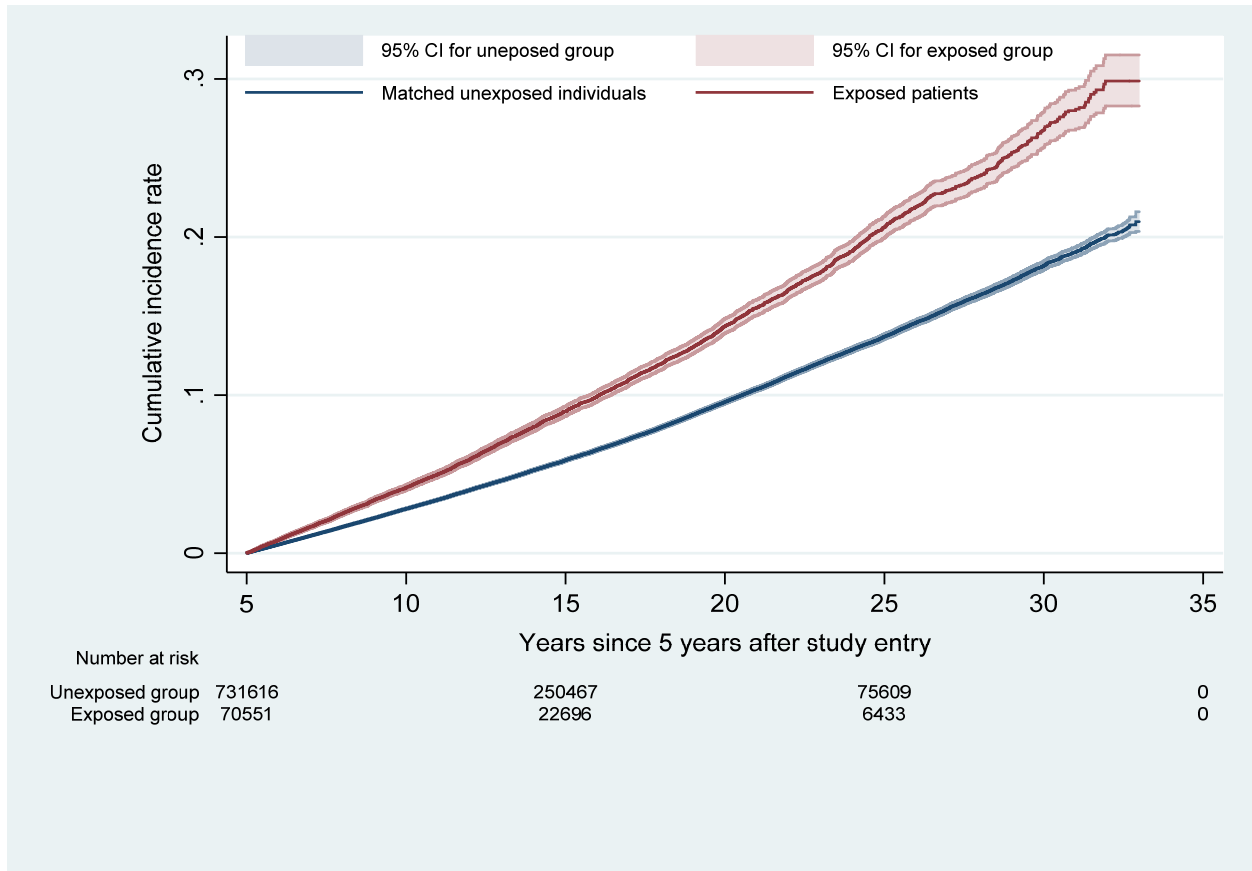
	No. of events/ No. of accumulated person-years×1 000 (incidence rate/ 1 000 person-years)		Hazard ratio (95% CI) <sup>a</sup>
	Exposed patients	Match unexposed individuals	
All stress-related disorders	8284/911.7(9.1)	57711/9675.7(6.0)	1.36 (1.33-1.40)
	940/911.7(1.0)	6517/9675.7(0.7)	1.36 (1.26-1.47)
	198/911.7(0.2)	1274/9675.7(0.1)	1.46 (1.24-1.72)
Posttraumatic stress disorder	532/50.3(10.6)	3412/533.1(6.4)	1.46 (1.32-1.61)
	71/50.3(1.4)	335/533.1(0.6)	2.29 (1.72-3.04)
	18/50.3(0.4)	63/533.1(0.1)	2.78 (1.52-5.09)
Acute stress reaction	3449/376.6(9.2)	24103/3990.0(6.0)	1.35 (1.30-1.40)
	385/376.6(1.0)	2630/3990.0(0.7)	1.35 (1.20-1.51)
	80/376.6(0.2)	465/3990.0(0.1)	1.66 (1.28-2.15)
Adjustment disorder and other stress reactions	4303/484.8(8.9)	30196/5152.6(5.9)	1.37 (1.32-1.41)
	484/484.8(1.0)	3552/5152.6(0.7)	1.29 (1.17-1.43)
	100/484.8(0.2)	746/5152.6(0.1)	1.23 (0.98-1.55)

\* Any autoimmune disease  
 ● MAS-more than 3 types of autoimmune diseases  
 ▲ MAS-more than 5 types of autoimmune diseases



<sup>a</sup> Cox models were stratified by matching identifiers (birth year and gender), and adjusted for education level, family income, marital status, Charlson comorbidity index score, family history of autoimmune disease, and history of other psychiatric disorder. The first year of follow-up was excluded from analyses.

**eFigure 3. Cumulative Incidence Rates of Autoimmune Disease Among Patients With Stress-Related Disorder (Exposed Group) and Their Matched Unexposed Individuals (Unexposed Group)<sup>a</sup>**



<sup>a</sup> Only participants with more than 5 years follow-up were included.