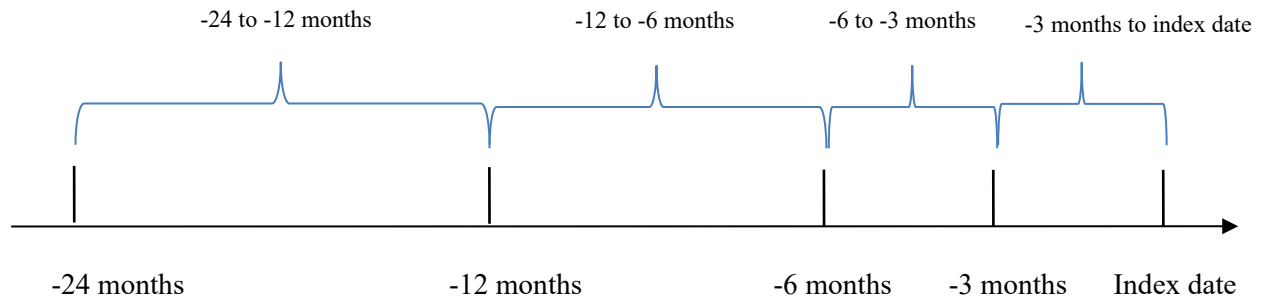


## Supplementary Materials:



**Figure S1.** Time period of the stress related disease before the diagnosis of IC/BPS (index date).

**Table S1.** ICD-9 diagnostic codes of 33 autoimmune diseases

Autoimmune Diseases	ICD-9-CM Codes
Graves' disease	242,242.01
Psoriasis	696, 696.1, 696.8
Systemic lupus erythematosus	710.0
Rheumatoid arthritis	714
Ankylosing spondylitis	720.0
Guillain–Barre's syndrome	357.0
Sjogren's syndrome	710.2
Myasthenia gravis	358.0
Pernicious anemia	281.0
Hereditary hemolytic anemia	282
Polyarteritis nodosa	446
Celiac disease	579.0
Uveitis	364.00, 364.01
Polymyalgia rheumatica	725
Dermatomyositis	710.3
Hashimoto's thyroiditis	245.2
Hypersensitivity vasculitis	446.2, 446.29
Behcet's disease	136.1
Polymyositis	710.4
Alopecia areata	704.01

Autoimmune hemolytic anemia	283.0
Multiple sclerosis	340
Systemic sclerosis	710.1
Juvenile rheumatoid arthritis	714.30, 714.33
Goodpasture syndrome	446.21
Giant cell arteritis	446.5
Thromboangitis obliterans	443.1
Arteritis obliterans	446.7
Kawasaki disease	446.1

**Table S2.** ICD-9 diagnostic codes of sleep disorders

sleep disorders	ICD-9-CM Codes
Alcohol induced sleep disorders	291.82
Drug induced sleep disorders	292.85
Nonorganic Sleep Disorder Unspecified	307.4
Organic sleep disorders	327
Restless Leg Syndrome	333.94
Cataplexy and narcolepsy	347
Unspecified sleep disturbance	780.5
Lack of adequate sleep	V69.4

**Table S3.** The repeat diagnosis of SRDs and odd ratio of the diagnosis of IC/BPS

	SRD visit at				
Type of SRD	-24 to -12 months	-12 to -6 months	-6 to -3 months	-3 months to index	Adjusted odds ratio (95% CI)
UTI					
	N	N	N	N	Reference
	Y (Ever diagnosed from -24 to -3 months)			N	5.33(4.33 to 6.56)
	N	N	N	Y	18.27(13.01 to 25.65)
	Y (Ever diagnosed from -24 to -3 months)			Y	50.17(36.95 to 68.13)
	N	N	Y	Y	45.61(19.82 to 104.96)
	N	Y	Y	Y	72.94(28.93 to 183.92)
	Y	Y	Y	Y	101.93(55.52 to 187.14)
Peptic ulcer					
	N	N	N	N	Reference
	Y (Ever diagnosed from -24 to -3 months)			N	2.70(2.25 to 3.24)
	N	N	N	Y	5.93(3.80 to 9.23)
	Y (Ever diagnosed from -24 to -3 months)			Y	3.62(2.72 to 4.83)
	N	N	Y	Y	2.36(1.11 to 5.01)
	N	Y	Y	Y	3.82(1.66 to 8.80)
	Y	Y	Y	Y	3.22(2.06 to 5.06)
IBS					
	N	N	N	N	Reference
	Y (Ever diagnosed from -24 to -3 months)			N	3.63(2.75 to 4.81)

	N	N	N	Y	5.44(2.75 to 10.73)
	Y (Ever diagnosed from -24 to -3 months)			Y	4.75(2.72 to 8.29)
	N	N	Y	Y	3.49(1.06 to 11.45)
	N	Y	Y	Y	9.56(2.37 to 38.64)
	Y	Y	Y	Y	4.21(1.21 to 14.58)
Depression					
	N	N	N	N	Reference
	Y (Ever diagnosed from -24 to -3 months)			N	2.21(1.81 to 2.69)
	N	N	N	Y	7.22(4.37 to 11.95)
	Y (Ever diagnosed from -24 to -3 months)			Y	3.79(3.00 to 4.79)
	N	N	Y	Y	3.01(1.26 to 7.20)
	N	Y	Y	Y	5.59(2.98 to 10.49)
	Y	Y	Y	Y	3.24(2.38 to 4.40)
Sleep disorders					
	N	N	N	N	Reference
	Y (Ever diagnosed from -24 to -3 months)			N	2.29(1.91 to 2.73)
	N	N	N	Y	3.57(2.40 to 5.32)
	Y (Ever diagnosed from -24 to -3 months)			Y	2.96(2.33 to 3.77)
	N	N	Y	Y	2.44(1.22 to 4.88)
	N	Y	Y	Y	1.67(0.75 to 3.73)
	Y	Y	Y	Y	2.95(2.10 to 4.15)
Allergic rhinitis					

	N	N	N	N	Reference
	Y (Ever diagnosed from -24 to -3 months)			N	1.73(1.42 to 2.10)
	N	N	N	Y	2.10(1.23 to 3.57)
	Y (Ever diagnosed from -24 to -3 months)			Y	2.08(1.41 to 3.07)
	N	N	Y	Y	5.77(2.00 to 16.67)
	N	Y	Y	Y	1.42(0.52 to 3.88)
	Y	Y	Y	Y	1.50(0.70 to 3.23)

**Table S4.** morbidities of autoimmune disease among study groups

Variables	Control	IC/BPS	Univariate OR (95% C.I.)	p
n	4412	1103		
Co-morbidities (within 2 year before index date) of autoimmune disease	318(7.2%)	128(11.6%)	1.69(1.36 to 2.11)	<0.001
Crohn's disease	60(1.4%)	28(2.5%)	1.88(1.20 to 2.96)	0.006
Sjogren syndrome	46(1.0%)	31(2.8%)	2.72(1.72 to 4.30)	<0.001
Rheumatoid arthritis	56(1.3%)	16(1.5%)	1.15(0.65 to 2.00)	0.635
Graves' disease	25(0.6%)	8(0.7%)	1.28(0.58 to 2.84)	0.543
Ankylosing spondylitis	16(0.4%)	6(0.5%)	1.53(0.58 to 4.04)	0.386
Systemic lupus erythematosus	9(0.2%)	6(0.5%)	2.67(0.95 to 7.49)	0.063
Hereditary hemolytic anemia	10(0.2%)	4(0.4%)	1.60(0.50 to 5.10)	0.427
Hashimoto's thyroiditis	7(0.2%)	5(0.5%)	2.86(0.91 to 9.00)	0.073
Uveitis	10(0.2%)	2(0.2%)	0.80(0.18 to 3.65)	0.773
Alopecia areata	8(0.2%)	2(0.2%)	1.00(0.21 to 4.71)	1.000
Polymyalgia rheumatica	9(0.2%)	0(0.0%)	-	-
Ulcerative colitis	3(0.1%)	5(0.5%)	6.67(1.59 to 27.90)	0.009
Polyarteritis nodosa	4(0.1%)	0(0.0%)	-	-

The rare autoimmune diseases were not listed, because of the poor statistical power.