

Supplemental file

The association between perceived stress, multimorbidity, and primary care health services – a Danish population-based cohort study

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eTable 1. Multimorbidity index diseases

Category	Disease group
Circulatory system	Hypertension
	Dyslipidemia
	Ischemic heart disease
	Atrial fibrillation
	Heart failure
	Peripheral artery occlusive disease
	Stroke
Endocrine system	Diabetes mellitus
	Thyroid disorder
	Gout
Pulmonary system and allergy	Chronic pulmonary disease
	Allergy
Gastrointestinal system	Ulcer/chronic gastritis
	Chronic liver disease
	Inflammatory bowel disease
	Diverticular disease of intestine
	Chronic kidney disease
Urogenital system	Prostate disorders
	Connective tissue disorders
Musculoskeletal system	Osteoporosis
	Painful condition
	Anaemias
Haematological system	HIV/AIDS
	Cancer
Cancers	Vision problem
Neurological system	Hearing problem
	Migraine
	Epilepsy
	Parkinson's disease
	Multiple sclerosis
	Neuropathies
	Mood, stress-related, or anxiety disorders
	Psychological distress
Mental health conditions	Alcohol problems
	Substance abuse
	Anorexia/bulimia
	Bipolar affective disorder
	Schizophrenia or schizoaffective disorder
	Dementia

HIV: human immunodeficiency virus; AIDS: acquired immunodeficiency syndrome.

^aFor details and coding definitions, please see Prior A, Fenger-Grøn M, Larsen KK, et al. The association between perceived stress and mortality among people with multimorbidity: A prospective population-based cohort study. *Am J Epidemiol* 2016;184:199-210.

eTable 2. Classification codes for services and prescriptions

Outcome	Danish National Health Service Register service codes*	ATC prescription codes
Talk therapy by GP	4003, 4021-4027, 4050, 4063, 4106, 4247-4249, 6101 (daytime)	
Psychometric tests	2149 (daytime)	
Psychologist services	0100-0299, 1000-3999 (daytime)	
Psychiatrist services	0110-0140, 0210-0236 (daytime)	
Antidepressant prescriptions		N06AB, N06AF, N06AG, N06AX (N06AX12 & N06AX05 excluded)
Anxiolytics prescriptions		N05BA, N05BE
Hypnotics prescriptions		N05CD, N05CF, N05CH
Daytime consultations	0101 (daytime)	
Out-of-hours contacts (telephone, consultations, home visits)	0501, 0602, 04XX (out-of-hours)	
Annual chronic care consultations	0106, 0120 (daytime)	
Spirometries	7113 (daytime)	
Blood sugar measures	7136 (daytime)	
ECGs	7156 (daytime)	
Home blood pressure measures	2146 (daytime)	

ATC: Anatomical Therapeutic Chemical classification.

* Provider specialty is general practice (codes 80-89), except for psychologists services (code 63) and psychiatrist services (code 24).

eTable 3. Incidence rate ratios of primary care services according to Perceived Stress Scale quintile for persons without psychiatric illness (N=109,137)

Activity	PSS quintile	Adj. IRR*	95% CI	Activity	PSS quintile	Adj. IRR*	95% CI
Talk therapy by GP	1	1	Reference	Spirometries	1	1	Reference
	2	1.36	(1.12,1.66)		2	1.10	(0.98,1.24)
	3	1.61	(1.32,1.96)		3	1.07	(0.94,1.21)
	4	2.39	(1.98,2.89)		4	1.15	(1.01,1.30)
	5	5.22	(4.36,6.26)		5	1.16	(1.01,1.32)
Psychometric tests	1	1	Reference	Blood sugar measures	1	1	Reference
	2	1.26	(1.05,1.52)		2	1.03	(0.98,1.08)
	3	1.78	(1.47,2.16)		3	1.06	(1.00,1.11)
	4	2.14	(1.78,2.58)		4	1.09	(1.04,1.16)
	5	3.99	(3.33,4.78)		5	1.12	(1.06,1.19)
Psychologist services	1	1	Reference	ECGs	1	1	Reference
	2	1.53	(1.09,2.15)		2	1.05	(0.99,1.12)
	3	1.97	(1.43,2.72)		3	1.08	(1.01,1.16)
	4	3.05	(2.21,4.23)		4	1.16	(1.09,1.24)
	5	6.83	(5.05,9.23)		5	1.15	(1.07,1.24)
Psychiatrist services	1	1	Reference	Home blood pressure measures	1	1	Reference
	2	2.17	(1.12,4.19)		2	1.06	(0.97,1.15)
	3	2.32	(1.14,4.71)		3	1.04	(0.95,1.14)
	4	5.69	(3.08,10.52)		4	1.09	(1.00,1.20)
	5	25.45	(14.54,44.54)		5	1.04	(0.93,1.15)
Antidepressants prescriptions	1	1	Reference	Annual chronic care consultation	1	1	Reference
	2	1.30	(1.04,1.63)		2	1.03	(0.98,1.07)
	3	2.22	(1.78,2.76)		3	1.05	(1.00,1.11)
	4	2.84	(2.31,3.50)		4	1.09	(1.04,1.15)
	5	6.79	(5.59,8.25)		5	1.24	(1.17,1.31)
Anxiolytics prescriptions	1	1	Reference	Out-of-hours contacts	1	1	Reference
	2	1.54	(1.27,1.87)		2	1.07	(1.01,1.13)
	3	2.07	(1.69,2.55)		3	1.13	(1.07,1.19)
	4	2.67	(2.21,3.24)		4	1.23	(1.16,1.30)
	5	5.01	(4.18,6.00)		5	1.47	(1.39,1.55)
Hypnotics prescriptions	1	1	Reference	Daytime consultations	1	1	Reference
	2	1.33	(1.17,1.51)		2	1.04	(1.02,1.06)
	3	1.61	(1.41,1.84)		3	1.09	(1.07,1.12)
	4	1.86	(1.63,2.12)		4	1.17	(1.14,1.19)
	5	2.96	(2.59,3.38)		5	1.28	(1.25,1.31)

PSS: Perceived Stress Scale. IRR: Incidence rate ratio.

*: adjusted for sex, age as 10-year age bands, presence of each of the 39 psychiatric and physical conditions in the multimorbidity index, socioeconomic factors, and lifestyle on index date.

eTable 4. Incidence rate ratios for primary care activities requested by non-respondents versus respondents

Activity	Non-respondent		Non-respondent adjusted	
	crude IRR	95% CI	IRR*	95% CI
Talk therapy by GP	1.18	(1.11,1.25)	1.23	(1.15,1.31)
Psychometric tests	1.20	(1.13,1.27)	1.14	(1.07,1.22)
Psychologist services	0.93	(0.85,1.02)	0.95	(0.83,1.09)
Psychiatrist services	1.32	(1.20,1.46)	1.46	(1.23,1.73)
Antidepressant prescriptions	1.96	(1.88,2.03)	1.46	(1.37,1.56)
Anxiolytics prescriptions	2.34	(2.20,2.48)	1.93	(1.78,2.09)
Hypnotics prescriptions	1.70	(1.62,1.79)	1.38	(1.30,1.47)
Spirometries	0.86	(0.81,0.91)	0.94	(0.88,0.99)
Blood sugar measures	0.94	(0.91,0.96)	0.97	(0.95,1.00)
ECGs	0.82	(0.79,0.85)	0.88	(0.86,0.91)
Home blood pressure measures	0.74	(0.70,0.77)	0.88	(0.84,0.93)
Annual chronic care consultation	0.88	(0.86,0.90)	0.93	(0.91,0.96)
Out-of-hours contacts	1.59	(1.51,1.68)	1.20	(1.17,1.23)
Daytime consultations	0.94	(0.93,0.95)	0.95	(0.94,0.96)

IRR: Incidence rate ratios.

*: IRRs adjusted for sex, age as 10-year age bands, presence of each of the 39 psychiatric and physical conditions in the multimorbidity index, cohabitation status, and educational level on index date.

The reference for each activity is survey respondents.

eTable 5. Incidence rate ratios for general primary care services in persons with any psychiatric condition versus persons without psychiatric conditions according to survey response status

Activity	Any psychiatric condition	Respondents		Non-respondents	
		Adj. IRR	95% CI	Adj. IRR	95% CI
Annual chronic care consultation	No	1	Reference	1	Reference
	Yes	1.39	(1.15,1.68)	1.26	(1.04,1.53)
Out-of-hours contacts	No	1	Reference	1	Reference
	Yes	1.77	(1.43,2.18)	1.85	(1.50,2.28)
Daytime consultations	No	1	Reference	1	Reference
	Yes	1.35	(1.24,1.48)	1.33	(1.21,1.45)

IRR: Incidence rate ratios.

*: IRRs adjusted for sex, age as 10-year age bands, presence of each of the 39 psychiatric and physical conditions in the multimorbidity index, cohabitation status and educational level on index date.