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The Impact of Chronic Somatic Diseases on the Course of Depressive and Anxiety Disorders

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In recent years, researchers have put a great effort in identifying predictive factors for the persistence of depressive and anxiety disorders. Chronic somatic disease might be such a factor for instance through a direct negative impact on overall functioning [1], recognition or treatment response [2] of depressed or anxious patients. Few studies have investigated the impact of specific somatic diseases. Wells et al. [3] found that a lifetime history of myocardial infarction was associated with persistent depression, whereas hypertension and insulin-dependent diabetes were not. In another study, hypertension, arthritis, cardiovascular disease and peptic ulcer were associated with persistence of depressive and anxiety disorders whereas COPD, asthma and diabetes were not [4]. These studies differ in populations, settings and methodology. Overall, there is a lack of sufficient and reliable data on the association between somatic diseases and the course of depressive and anxiety disorders. This study examined the influence of specific somatic diseases on the 2-year course of depressive and anxiety disorders.

We used data from the Netherlands Study of Depression and Anxiety, an ongoing cohort study including 2,981 participants aged 18–65 years [5]. At baseline, depressive (major depressive disorder, dysthymia) and anxiety disorders (panic disorder, social phobia, generalized anxiety disorder) were assessed using the Composite International Diagnostic Interview (CIDI) [6]. Of the eligible participants with a current 6-month depressive or anxiety diagnosis, 1,209 participated in the 2-year follow-up assessment and were included in our study.

Chronic somatic diseases were self-reported diseases monitored by a healthcare professional and/or treated with medication. We classified somatic diseases into 7 disease categories (table 1). Next, we confirmed the categories by appropriate medication use, assessed from the brought-in medication containers classified according to the Anatomical Therapeutic Chemical (ATC) classification. In addition to specific diseases, we also created general indicators: the number of self-reported somatic disease categories and the number of medications used.

As done before [7], to assess the course of depressive and anxiety disorders we used (a) the psychiatric status after 2 years based on the presence of CIDI DSM-IV diagnosed depressive or anxiety disorder (6-month recency) and (b) the clinical course trajectory of the psychiatric disorder based on the Life Chart Inventory (LCI) [8]. Based on both the depressive and anxiety symptoms over time we discerned three clinical course trajectories: (a) early sustained remission (within 6 months), (b) late sustained remission (after 6 months) and (c) remission with recurrence of symptoms (at least 3 months symptom-free interval) or a chronic course (symptoms during the entire follow-up).

Logistic regression analyses were used to assess the association between somatic disease variables, before and after medication confirmation, with presence of 6-month depressive and anxiety disorders at 2-year follow-up. Multinomial regression analyses assessed the associations of somatic diseases with clinical course trajectories using early sustained remission as reference category.

The mean age of the respondents was 42.1 years, 66% were female and mean education was 11.8 years. 56.7% reported no chronic somatic disease, 27.6% had one, and 15.7% had two or more somatic diseases. The average number of medications used was 2.3 (SD 2.1). 61.5% of the sample still had a depressive or anxiety disorder after 2 years and 62% had a recurrent or chronic course during the 2-year follow-up.

In age-, sex- and education-adjusted analyses, only the musculoskeletal disease category was significantly associated with still having a depressive and/or anxiety disorder at 2-year follow-up (OR = 1.97; 95% CI = 1.29–3.01) (table 1). Results for medication-confirmed disease categories were very similar to self-reported data results (table 2). For specific somatic diseases within categories we found that only osteoarthritis showed a significant association with a persistent mental disorder (OR = 1.69; 95% CI = 1.05–2.71). The OR for diabetes was tentative but nonsignificant (OR = 1.81; 95% CI = 0.87–3.76).

The results for the association between somatic disease categories and the three clinical course trajectories over 2 years showed that the cardiometabolic disease category was associated with having a recurrent or chronic course (OR = 1.54; 95% CI = 1.02–2.31). This association was mainly driven by diabetes (OR = 2.77; 95% CI = 1.15–6.66).

In sum, we showed that especially musculoskeletal disease and diabetes were associated with a poorer course of depressive and anxiety disorders. No other chronic somatic disease nor the number of chronic diseases or medication significantly predicted the course.

Our finding that musculoskeletal disease, in particular osteoarthritis, was significantly associated with still having depression or anxiety after 2 years agrees with results found by Kisely and Simon [4]. Osteoarthritis is generally characterized by a slowly progressive decline in physical and social role functioning and lifestyle adjustments, as a consequence of pain of the joints and disability. The pain and disability may be worse than for other diseases, which might explain why depressive and anxiety symptoms occur and may more often persist over time [9].

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Table 1. Associations between baseline somatic disease and medication use and a depressive and/or anxiety disorder at 2-year follow-up (overall n = 1,209)[a]

Baseline variable			Odds of still having a disorder after 2 years		Odds of having a late recovery[c]		Odds of having a recurrent or chronic course[c]	
			OR (95% CI)	p[b]	OR (95% CI)	p[b]	OR (95% CI)	p[b]
Chronic somatic disease categories								
Cardio-metabolic	hypertension, angina pectoris, history of cardiac disease, stroke, diabetes	17.6%	1.20 (0.86–1.69)	0.286	1.38 (0.78–2.43)	0.272	1.54 (1.02–2.31)	0.038
Respiratory	asthma, chronic bronchitis, pulmonary emphysema	10.2%	0.86 (0.58–1.26)	0.430	1.23 (0.66–2.29)	0.507	0.99 (0.63–1.56)	0.958
Musculo-skeletal	osteoarthritis, rheumatoid arthritis, systemic lupus erythematodes, fibromyalgia	10.8%	1.97 (1.29–3.01)	0.002	1.20 (0.61–2.35)	0.598	1.45 (0.90–2.33)	0.125
Digestive	ulcer, irritable bowel syndrome, Crohn's disease, colitis ulcerosa, diverticulitis, liver cirrhosis, hepatitis, constipation	12.7%	1.02 (0.72–1.46)	0.898	0.88 (0.49–1.59)	0.681	0.95 (0.64–1.42)	0.811
Neurological	migraine, epilepsy, multiple sclerosis, peripheral neuropathy, hernia	3.5%	0.60 (0.33–1.12)	0.110	1.31 (0.55–3.15)	0.545	0.61 (0.30–1.25)	0.175
Endocrine	thyroid dysfunction	3.2%	0.84 (0.43–1.61)	0.593	2.21 (0.83–5.93)	0.113	1.08 (0.47–2.47)	0.860
Cancer	throat, thyroid, lymphoid, lung, esophagus, bowel, stomach, liver, uterus, cervix, ovary, bladder, testicle, prostate, skin, brain, blood	6.6%	1.18 (0.73–1.91)	0.509	1.69 (0.80–3.60)	0.170	1.18 (0.66–2.13)	0.578
Number of diseases (mean ± SD)								
Continuum		0.7 ± 0.9	1.08 (0.94–1.25)	0.178	1.22 (0.97–1.54)	0.095	1.12 (0.94–1.32)	0.206
Number of medications (mean ± SD)								
Continuum		2.3 ± 2.2	1.03 (0.97–1.09)	0.358	1.01 (0.92–1.11)	0.873	1.03 (0.96–1.10)	0.445

[a] Adjusted for age, sex and years of education. [b] Using logistic regression analyses. [c] Compared to an early recovery of depressive and/or anxiety disorder.

Diabetes made patients more prone towards a recurrent or chronic course of depressive and/or anxiety disorders. Interestingly, Wells et al. [3] and Kisely and Simon [4] did not find an association between diabetes and course of depression and anxiety. However, their studies only assessed current depression and anxiety at a few moments, which may not pick up a fluctuating recurrent course as was assessed with the LCI in our study. Depression and anxiety are associated with hypothalamic-pituitary-adrenocortical axis abnormalities and autonomic nervous system and metabolic dysregulations, which could all contribute to poorer glycemic control and more diabetes symptoms. In diabetes patients with depression and/or anxiety, physical inactivity, poor self-care, poor adherence to medical treatment, poorer glycemic control and more diabetes symptoms have been found [10]. Consequently, less well controlled diabetes might lead to neurochemical changes that result in worse depression and anxiety over time.

Our study also has some limitations. We did not consider duration of somatic disease and mainly used self-report data. However, when medication use was used to confirm diagnoses, results were very similar. Whether persons were treated with antidepressant medication or psychological treatment was not taken into account, since a previous study showed no significant differences in course trajectories [7].

The results of our longitudinal study indicate that musculoskeletal disease and diabetes influenced the course of depression and anxiety negatively, whereas other specific somatic diseases did not. Consequences of these findings for future treatment urgently deserve further study.

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Disclosure Statement

All authors declare that they have no conflicts of interest.

Table 2. Associations between baseline chronic somatic disease after medication confirmation and a depressive and/or anxiety disorder at 2-year follow-up (n = 1,209)[a] [ATC classification[c]]

Baseline variable		%	Odds of still having a disorder after 2 years	
			OR (95% CI)	p[b]
Cardio-metabolic	medication confirmation: antihypertensives [C02], diuretics [C03], beta-blocking agents [C07], calcium channel blockers [C08], agents acting on renin-angiotensin system [C09], lipid-modifying agents [C10], nitrate vasodilators [C01DA] or anticoagulant/antiplatelet agents [B01, N02BA01 ≤100 mg, N02BA15], medication used in diabetes [A10]	15.6	1.30 (0.91–1.86)	0.154
Respiratory	nasal preparations [R01], medication for obstructive airway diseases [R03], cough and cold preparations [R05], antihistamines for systemic use [R06], other respiratory system products [R07], corticosteroids for systemic use [H02]	5.5	0.89 (0.53–1.49)	0.663
Musculo-skeletal	antiinflammatory and antirheumatic products [M01], opioids [N02A], other analgesics and antipyretics [N02B], corticosteroids for systemic use [H02], immunosuppressants [L04]	4.1	1.65 (0.86–3.16)	0.134
Digestive	medication for acid-related disorders [A02], for functional gastrointestinal disorders [A03], antiemetics and antinauseants [A04], bile and liver therapy [A05], laxatives [A06], antidiarrheals, intestinal antiinflammatory/antiinfective agents [A07], corticosteroids for systemic use [H02], immunosuppressants [L04]	7.0	1.01 (0.63–1.61)	0.967
Neurological	analgesics [N02], nonsteroidal antiinflammatory and antirheumatic products [M01A], antiinflammatory/antirheumatic agents in combination [M01B], antiepileptics [N03], corticosteroids for systemic use [H02], interferon [L03AB02]	1.6	0.53 (0.21–1.32)	0.050
Endocrine	medication used in thyroid dysfunction [H03]	2.4	1.12 (0.51–2.44)	0.780
Cancer	medication used in cancer treatment [L01, L02, L03, L04], analgesic medication (opioids [N02A], other analgesics and antipyretics [N02B] and nonsteroidal antiinflammatory and antirheumatic products [M01A], antiinflammatory/antirheumatic agents in combination [M01B]	1.5	1.43 (0.50–4.08)	0.499

[a] Adjusted for age, sex and years of education. [b] Using logistic regression analyses. [c] Anatomical Therapeutic Chemical classification, WHO Collaborating Centre for Drug Statistics Methodology, Geneva, 2007.

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