

Supplementary Table 1. NIH Quality Assessment

First Author	Year	Study	Quality Assessment												
			Case-Controls												
			Research Question	Study Population	Power Calculation	All Recruited from Same Population	Inclusion/Exclusion	Defined Case/Control	Random Selection	Concurrent Controls	Exposure prior to Outcome	Valid Exposure Assessment	Assessor Blinding	Analyses for Confounds	
Battaglia	1998	An investigation of the co-occurrence of panic and somatization disorders through temperamental variables	✓	X	X	X	NR	X	NR	NR	X	✓	NR	X	
Brown	2005	Dissociation, childhood interpersonal trauma, and family functioning in patients with somatization disorder	✓	X	X	X	✓	✓	CD	X	✓	✓	NR	X	
Brown	2014	Trauma exposure and Axis I psychopathology: A cotwin control analysis in Norwegian young adults	✓	✓	X	✓	✓	✓	NR	✓	✓	✓	NR	✓	
Davoodi	2018	Early maladaptive schemas in depression and somatization disorder	✓	✓	X	✓	✓	✓	CD	NR	✓	✓	NR	✓	
Davoodi	2018	Emotion regulation strategies in depression and somatization disorder	✓	X	X	✓	✓	✓	CD	NR	✓	✓	NR	✓	
Espirito-Santo	2009	Psychiatric symptoms and dissociation in conversion, somatization and dissociative disorders	X	X	X	✓	✓	✓	NR	NR	X	✓	X	X	
Fayed	2011	Brain dysfunction in fibromyalgia and somatization disorder using proton magnetic resonance spectroscopy: a controlled study	✓	X	X	X	✓	✓	X	NR	✓	✓	X	X	
García Campayo	2007	P300 endogen evoked potentials in somatization disorder: a controlled study	✓	X	✓	✓	✓	✓	NA	NR	✓	✓	X	X	
García Campayo	2007	Personality disorders in somatization disorder patients: A controlled study in Spain	✓	✓	✓	✓	✓	✓	X	X	X	✓	✓	X	
Gelauff	2019	The prognosis of functional limb weakness: a 14-year case-control study	✓	✓	X	✓	✓	✓	X	✓	✓	✓	X	✓	
Guo	2017	Anatomical distance affects cortical-subcortical connectivity in first-episode, drug-naive somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	X	
Guz	2004	Conversion and somatization disorders: Dissociative symptoms and other characteristics	X	✓	X	✓	✓	✓	NR	NR	X	✓	NR	X	
Hossain	2007	Serum immunoglobulin profile in somatization disorder patients	✓	X	X	✓	✓	X	✓	NR	✓	✓	X	X	

Hossain	2007	Serum level of copper, zinc and manganese in somatization disorder patients	✓	X	X	✓	✓	X	✓	NR	✓	✓	X	X
Kirpınar	2015	Somatization disorder and hypochondriasis: as like as two peas?	✓	X	X	✓	✓	✓	NA	NR	X	✓	NR	X
Landa	2012	Beyond the unexplainable pain: relational world of patients with somatization syndromes	✓	X	X	✓	✓	✓	X	NR	✓	✓	X	X
Li	2018	Bidirectional causal connectivity in the cortico-limbic-cerebellar circuit related to structural alterations in first-episode, drug-naive somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	✓
Mohlman	2004	Distinguishing generalized anxiety disorder, panic disorder, and mixed anxiety states in older treatment-seeking adults	✓	✓	X	✓	✓	✓	NA	✓	X	✓	NR	X
Ou	2018	Increased coherence-based regional homogeneity in resting-state patients with first-episode, drug-naive somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	X
Padhy	2016	Comparison of psychiatric morbidity in patients with irritable bowel syndrome and non-ulcer dyspepsia	✓	X	X	✓	✓	✓	NR	✓	✓	✓	NR	✓
Pan	2019	Voxel-based global-brain functional connectivity alterations in first-episode drug-naive patients with somatization disorder	✓	X	X	X	✓	✓	X	✓	✓	✓	X	X
Rief	2001	Immunological differences between patients with major depression and somatization syndrome	✓	X	X	✓	✓	✓	X	NR	X	✓	X	X
Rief	2003	A new approach to the assessment of the treatment effects of somatoform disorders	✓	X	X	✓	✓	✓	X	✓	X	✓	X	X
Sanyal	1998	Electro-dermal arousal and self-appraisal in patients with somatization disorder	✓	X	X	X	X	✓	X	NR	X	✓	X	X
Sertoz	2009	Body image and self-esteem in somatizing patients	✓	✓	X	X	✓	✓	NR	X	X	✓	NR	X
Song	2015	Abnormal regional homogeneity and its correlations with personality in first-episode, treatment-naive somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	X
Spitzer	2008	Childhood maltreatment in patients with somatization disorder	✓	X	X	✓	✓	✓	X	NR	✓	✓	NR	X
Spitzer	2009	Complex post-traumatic stress disorder in patients with somatization disorder	✓	X	X	✓	✓	✓	X	NR	✓	✓	NR	X
Stone	2010	The symptom of functional weakness: a controlled study of 107 patients	✓	✓	X	✓	✓	✓	X	✓	✓	✓	X	✓
Su	2014	Dissociation of regional activity in default mode network in medication-naive, first-episode somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	X
Su	2015	Increased functional connectivity strength of right inferior temporal gyrus in first-episode, drug-naive somatization disorder	✓	X	X	X	✓	✓	X	✓	✓	✓	X	X
Su	2016	Decreased interhemispheric functional connectivity in insula and angular gyrus/supramarginal gyrus: Significant findings in first-episode, drug-naive somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	✓

Taycan	2014	Trauma-related psychiatric comorbidity of somatization disorder among women in eastern Turkey	✓	X	X	X	✓	✓	✓	NR	✓	✓	NR	X	
Wang	2016	Clinical significance of increased cerebellar default-mode network connectivity in resting-state patients with drug-naive somatization disorder	✓	X	X	X	✓	✓	X	NR	✓	✓	X	X	
Wei	2016	Abnormal default-mode network homogeneity and its correlations with personality in drug-naive somatization disorder at rest	✓	X	X	X	✓	✓	X	NR	✓	✓	X	✓	
Observational Cohort															
			Research Question	Study Population	Participation Rate	All Recruited from Same Population	Power Calculation	Exposure prior to Outcome	Sufficient Timeframe	Levels of Exposure	Repeated Assessments	Valid Outcome Measures	Assessor Blinding	Follow-up Rate	Analyses for Confounds
Carey	2003	Trauma and posttraumatic stress disorder in an urban Xhosa primary care population: Prevalence, comorbidity, and service use patterns	✓	✓	✓	✓	X	✓	✓	✓	X	✓	✓	NA	X
Chander	2019	The prevalence and its correlates of somatization disorder at a quaternary mental health centre	✓	X	✓	✓	✓	✓	NA	NA	X	✓	NR	✓	X
Epstein	2016	Insights into chronic functional movement disorders: the value of qualitative psychiatric interviews	✓	✓	✓	✓	X	✓	NA	NA	X	X	X	✓	X
Escobar	1998	DSM-IV hypochondriasis in primary care	✓	X	✓	✓	X	✓	✓	NA	X	✓	NA	✓	X
Fink	2002	The prevalence of somatoform disorders among medical inpatients	✓	✓	✓	✓	X	X	NA	NA	X	✓	✓	✓	X
Fink	2005	Somatoform disorders among first-time referrals to a neurology service	✓	✓	✓	✓	X	X	NA	NA	X	✓	NA	✓	NA
Frosthalm	2014	Are illness perceptions related to future healthcare expenditure in patients with somatoform disorders?	✓	✓	✓	✓	X	✓	✓	✓	X	✓	NR	✓	✓
García-Campayo	2000	SPECT scan in somatization disorder patients: an exploratory study of eleven cases	✓	✓	✓	✓	X	✓	✓	NA	X	✓	X	✓	X
Hiller	2000	The DSM-IV nosology of chronic pain: a comparison of pain disorder and multiples somatization syndrome	✓	X	✓	✓	X	✓	✓	✓	X	✓	NA	✓	X
Interian	2004	The value of pseudoneurological symptoms for assessing psychopathology in primary care	✓	X	X	✓	X	✓	NA	✓	X	✓	X	✓	✓
Lynch	1999	Somatization in family practice: Comparing 5 methods of classification	✓	X	✓	✓	X	NA	NA	NA	X	✓	X	X	X
Manchikanti	2007	Psychological factors as predictors of opioid abuse and illicit drug use in chronic pain patients	✓	X	✓	✓	X	✓	✓	✓	NA	✓	X	NA	X
Manchikanti	2008	Influence of psychological variables on the diagnosis of facet joint involvement in chronic spinal pain	✓	X	✓	✓	X	✓	✓	X	NA	✓	X	NA	X

Marchetti	2007	Psychiatric diagnoses of patients with psychogenic non-epileptic seizures	✓	✓	X	✓	X	NA	NA	NA	X	✓	X	✓	X
Miller	2001	The association of irritable bowel syndrome and somatization disorder	✓	X	✓	✓	X	✓	✓	NA	X	✓	NA	✓	X
North	2004	The presentation of irritable bowel syndrome in the context of somatization disorder	✓	X	X	✓	✓	✓	✓	NA	✓	✓	X	X	✓
Öztürk	2008	Somatization as a predictor of suicidal ideation in dissociative disorders	✓	✓	NR	NR	X	X	X	✓	X	✓	NR	NA	✓
Prerana	2017	Somatization disorder: Are we moving towards an over-generalized and over-inclusive diagnosis in DSM-V?	✓	✓	NR	✓	X	✓	NA	NA	X	✓	NA	✓	X
Schrag	2004	The syndrome of fixed dystonia: an evaluation of 103 patients	✓	X	X	✓	X	✓	NA	NA	X	X	X	✓	X
Simon	1999	Stability of somatization disorder and somatization symptoms among primary care patients	✓	✓	✓	✓	X	✓	✓	NA	✓	✓	X	✓	X
Smith	2005	Exploration of DSM-IV criteria in primary care patients with medically unexplained symptoms	✓	✓	X	✓	X	NA	NA	NA	X	✓	X	✓	X
Weiss	2017	Health care utilization in outpatients with somatoform disorders: Descriptives, interdiagnostic differences, and potential mediating factors	✓	X	✓	✓	X	✓	✓	NA	X	✓	NA	✓	✓

Controlled Intervention

			Randomized	Adequate Randomization	Concealed Allocation	Subject/ Provider Blinding	Assessor Blinding	Baseline Similarities	Overall Dropout Rate	Differential Dropout Rate	Adherence	Avoid Other Interventions	Valid Outcome Measures	Power Calculation	Prespecified Outcomes	Intent-to-Treat
Allen	2006	Cognitive-behavioral therapy for somatization disorder: A randomized controlled trial	✓	✓	✓	X	✓	✓	✓	✓	✓	NR	✓	X	✓	✓
Bleichhardt	2002	Cognitive-behavioural therapy for patients with multiple somatoform symptoms—a randomised controlled trial in tertiary care	✓	NR	NR	X	NR	✓	✓	NR	NR	NR	✓	X	X	✓
Fjorback	2012	Mindfulness therapy for somatization disorder and functional somatic syndromes — Randomized trial with one-year follow-up	✓	✓	✓	X	NR	✓	✓	✓	✓	NR	✓	✓	✓	✓
Hiller	2003	A controlled treatment study of somatoform disorders including analysis of healthcare utilization and cost-effectiveness	X	NA	NA	X	NR	X	✓	NR	NA	NR	✓	X	X	X
Martin	2007	A one-session treatment for patients suffering from medically unexplained symptoms in primary care: A randomized clinical trial	✓	✓	NR	X	NR	X	✓	✓	✓	NR	✓	X	✓	✓
Schroder	2012	Cognitive-behavioural group treatment for a range of functional somatic syndromes: randomised trial	✓	✓	✓	X	X	CD	X	✓	✓	X	✓	✓	✓	✓

Schroder	2013	Cognitive behavioral therapy versus progressive muscle relaxation training for multiple somatoform symptoms: Results of a randomized controlled trial	✓	NR	NR	X	NR	✓	✓	✓	✓	X	✓	✓	✓	✓
Van Ravesteijn	2013	Mindfulness-based cognitive therapy for patients with medically unexplained symptoms: A randomized controlled trial	✓	✓	✓	X	NR	✓	✓	✓	✓	NR	✓	✓	✓	✓
Voon	2005	Antidepressant treatment outcomes of psychogenic movement disorder	X	NA	NA	X	X	X	NR	NR	X	X	✓	X	X	NR
Zonneveld	2012	Effective group training for patients with unexplained physical symptoms: A randomized controlled trial with a non-randomized one-year follow-up	✓	✓	✓	X	NR	✓	✓	X	✓	NR	✓	✓	✓	✓

Pre-Post No Control

			Research Question	Study Population	Representative Sample	Inclusion/Exclusion	Power Calculation	Consistent Intervention	Valid Outcome Measures	Assessor Blinding	Follow-up Rate	Statistical Analysis	Repeated Assessments	Individual-Level Outcomes
Allen	2001	Cognitive behavior therapy for somatization disorder: a preliminary investigation	✓	X	✓	✓	X	✓	✓	NR	✓	✓	✓	NA

Case Series

			Research Question	Study Population	Consecutive Cases	Comparable Subjects	Intervention	Valid Outcome Measures	Follow-up Length	Defined Statistical Methods	Clear Results
Kuwabara	2007	Diagnostic classification and demographic features in 283 patients with somatoform disorder	X	✓	NR	✓	NA	CD	NA	X	✓
Morse	1997	The meaning of symptoms in 10 women with somatization disorder and a history of childhood abuse	✓	X	NR	✓	NA	✓	NA	✓	✓

Abbreviations: NR: Not reported; NA: Not applicable; CD: Cannot Determine.

Supplementary Table 2. Summary of neuroimaging studies in DSM-IV somatization disorder.

Study	Participants	Methods	Results
Su Q, et al. PLoS ONE. 2014; 9: e99273.	SD (n=25), 21 Female, 4 Male, age=41.0±10.8	Fractional amplitude of low frequency fluctuations (fALFF)	↑ fALFF in the bilateral superior medial prefrontal cortex; ↓ fALFF in the left precuneus
Song Y, et al. International Journal of Psychophysiology. 2015; 97: 108–12.	HC (n=28), 22 Female, 6 Male, age=38.7.0±9.6	Regional homogeneity (ReHo) measures the synchronization of the time series of neighboring voxels	↑ ReHo in the left angular gyrus
Su Q, et al. Australian & New Zealand Journal of Psychiatry. 2015; 49: 74–81.		Resting-state functional connectivity (rsFC) strength measured with graph theory	↑ rsFC strength in the right inferior temporal gyrus
Wei S, et al. Journal of Affective Disorders. 2016; 193: 81–8.		Network Homogeneity (NH) to detect specific loci of compromised connectivity and to study within network coherence	↑ NH in the left superior frontal gyrus; ↓ NH bilateral precuneus
Wang H, et al. Medicine. 2016; 95: e4043.		Seed-based functional connectivity method to measure cerebellar-based default mode network (DMN). - Right Crus I - Left Crus I - Lobule IX	↑ left/right Crus I-left/right angular gyrus connectivity; ↑ Lobule IX-left superior medial prefrontal cortex connectivity
Su Q, et al. Psychiatry Research: Neuroimaging. 2016; 248: 48–54.		Voxel-mirrored Homotopic connectivity (VMHC) to examine interhemispheric changes	↓ VMHC in the angular gyrus/supramarginal gyrus and insula.
Guo W, et al. Journal of Affective Disorders. 2017; 217: 153–8.		Examining short and long-range rsFC	↑ short-range rsFC in the right superior frontal gyrus and ↓ short-range rsFC in the left pallidum; ↑ long-range rsFC in the left middle frontal gyrus and right inferior temporal gyrus.

Ou Y, et al. <i>Journal of Affective Disorders</i>. 2018; 235: 150–4.		Coherence based regional homogeneity (Cohe-ReHo) to detect abnormal regional synchronization	↑ Cohe-ReHo in the left medial prefrontal cortex/anterior cingulate cortex
Li R, et al. <i>Front Psychiatry</i> 2018; 9: 162.		Granger causality analysis (GCA) were used to analyze causal connectivity of the cortico-limbic-cerebellar circuit.	GCA: Bidirectional cortico-limbic-cerebellar connectivity abnormalities.
Pan P, et al. <i>J Affect Disord</i> 2019; 254: 82–9		Voxel-wise brain-wide rsFC alterations.	↑ Global rsFC in the right inferior temporal gyrus and left superior occipital gyrus; ↓ Global rsFC in the right insula
Garcia-Campayo J, et al. <i>Australian and New Zealand Journal of Psychiatry</i> 2001; 35:359–363	SD (n=11), 5 Female, 6 Male, age=49.0±5.2	Single photon emission computed tomography scan (SPECT)	4 patients had normal SPECT scans. 4 patients had hypoperfusion in the right cerebellum; 3 in the frontal and prefrontal area; 2 in the temporoparietal area; and only one subject had a complete hypoperfusion the right hemisphere.
Fayed N, et al. <i>Acta Psychiatr Scand</i> 2012; 126: 115–25.	SD (n=10), 8 Female, 1 Male, age=43.9±10 Fibromyalgia (n=10), 9 Female, 1 Male, age=38.9±5.6 HC (n=10), 8 Female, 2 Male, age=39.5±11.1	MRI Spectroscopy. Brain metabolites measured in: -Insula -Hippocampus -Posterior cingulate	Fibromyalgia and SD patients had ↑ levels of glutamate metabolites in the posterior cingulate but this finding did not remain statistically significant when comparing only SD and HCs.

Abbreviations. fALFF: fractional amplitude of low frequency fluctuations; ReHo: regional homogeneity; rsFC: resting-state functional connectivity; DMN: default-mode-network; VMHC: voxel-mirrored homotopic connectivity; Cohe-ReHo: coherence based regional homogeneity; GCA: Granger causality analysis; GMV: gray matter volume; SPECT: single photon emission computed tomography scan; SD: somatization disorder; HC: healthy control; (↑) increase; (↓) decrease.

Supplementary Table 3. Treatment Studies in DSM-IV Somatization Disorder.

Study	Participants	Methods	Results	Strengths & Limitations
DSM-IV Somatization Disorder Cohorts				
<i>Allen et al., 2001</i>	DSM-IV somatization disorder (n=11; F=6; M=5)	<p data-bbox="716 147 1031 326">Within-group design</p> <p data-bbox="716 261 1031 326">10-session weekly outpatient CBT</p> <p data-bbox="716 407 1031 618">Primary outcomes: physical discomfort scores (symptom diaries & SSS) & SF-36 physical functioning scores</p> <p data-bbox="716 699 1031 813">Secondary outcomes: depression (BDI), anxiety (BAI)</p> <p data-bbox="716 894 1031 1057">3 assessment timepoints: baseline, post-treatment, and 8-month follow-up</p>	<p data-bbox="1066 147 1577 245">Primary outcomes: less physical discomfort and improved physical functioning at each follow-up</p> <p data-bbox="1066 326 1577 391">Secondary outcomes: depression and anxiety also improved at each follow-up</p>	<p data-bbox="1625 147 1955 245">Strength: homogenous DSM-IV somatization disorder sample</p> <p data-bbox="1625 326 1955 391">Limitations: small sample size, no control condition</p>
<i>Allen et al., 2006</i>	DSM-IV somatization disorder (n=84; F=75; M=9)	<p data-bbox="716 1073 1031 1105">Between-groups design</p> <p data-bbox="716 1187 1031 1219">10-session (over ~3</p>	<p data-bbox="1066 1073 1577 1170">Primary outcome: CBT+PCI arm showed greater reductions in CGI-SD severity scores vs. PCI-alone at all follow-up time</p>	<p data-bbox="1625 1073 1955 1138">Strength: large sample size with an active control arm</p>

<p>months) outpatient CBT+PCI (n=43) vs. PCI alone (n=41)</p> <p>Primary outcome: Somatization Severity (CGI-SD)</p> <p>Secondary outcomes: SF-36, Symptom Diaries and SSS</p> <p>4 assessment timepoints: baseline, 3-, 9-, 15-month follow-ups</p>	<p>points</p> <p>Secondary outcomes: Physical functioning and somatic symptoms also improved</p>	<p>Limitation: limited generalizability due to lack of random sampling</p>
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<p>Fjorback et al., 2012</p> <p>Bodily distress syndrome (n=119; F=95; M=24; 95% met DSM-IV criteria for somatization disorder)</p>	<p>Between-groups design</p> <p>Mindfulness therapy (8 weekly sessions plus 1 follow-up) (n=59) vs. enhanced treatment as usual with a psychiatric consultation (n=60)</p> <p>Primary outcome: change in physical component score (SF- 36) at 15-months</p>	<p>Primary outcome: no difference between treatment arms</p> <p>Secondary outcomes: mindfulness vs. enhanced treatment as usual showed improved general health, health anxiety, physical symptoms, anxiety & depression</p>	<p>Strengths: low drop-out rate, high attendance</p> <p>Limitations: only included subjects with severe and chronic symptoms and had low social functioning</p>
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Secondary outcomes:
 other SF-36 domains,
 WI, SCL-90-R-
 somatization score;
 SCL-8 depression and
 anxiety

4 assessment
 timepoints: baseline, 3-
 9-, 15-month follow-ups

Mixed Cohorts (Including DSM-IV Somatization Disorder)

Hiller et al., 2003	Mixed SFD (n=172; F=118; M=54; 31% met criteria for DSM-IV somatization disorder)	Between- and within-groups design	Primary outcome not specified	Strength: use of other psychiatric and wait-list controls
	Comparison group: other DSM-IV psychiatric diagnoses – predominately mood/anxiety disorders (n=123; F=77; M=46)	15-20 hours of inpatient CBT-based therapy (mean treatment duration: 58.6 days for SFD; 52.2 days for comparison group)	Both patient groups showed improvement over time but were not significantly different from one another	Limitations: primary outcome not specified, lack of randomization
	Wait-list (n=262); mean wait 135 days	Outcome measures: SOMS, WI, Cognitions About Body and Health Questionnaire (CABAH), BDI, Dysfunctional Analysis Questionnaire (DAQ),	The wait-list group showed improvement in BDI scores only (note: wait-list did not complete SOMS)	

Socioeconomic Status,
Healthcare Utilization

3 assessment
timepoints: pre, post, 2-
year follow-up

**Rief et al.,
2003**

Mixed SFD (n=325; F=215;
M=110; 18% met criteria for
DSM-IV somatization
disorder)

Within-group design

Intensive inpatient
treatment program
(including individual
and group CBT,
relaxation training, and
other interventions)
(n=325)

Wait-list: subset of
main SFD group (n=34)

Primary Outcomes:
SOMS-7 Symptom
Count and
Somatization Severity

Primary outcome: subjects from the full
group (n≥275 for each measure) showed
a decrease in symptom count and
somatization severity between admission
and discharge

Wait-list subjects showed an increase in
symptom count and somatization severity
between pre-treatment wait and
admission

Strengths: large sample
size, use of a wait-list
control, good reliability and
validity of SOMS-7

Limitations: lack of
comprehensive description
of treatment(s)

**Bleichhardt
et al. 2004**

Somatization syndrome
(n=191; F=140; M=51; 28%
met criteria for DSM-IV
somatization disorder)

Between- and within-
groups design

8-session inpatient

Primary outcome not specified

Both treatment arms showed
improvement at discharge and 1-year

Strength: comparison of two
relevant CBT-based
treatments

<p>CBT+symptom management training (n=107) vs. 8-session inpatient CBT+relaxation training (n=84) (mean treatment period for both groups: 51.9 days) vs. wait list (n=34) (mean wait: 128.1 days)</p> <p>Outcome measures: interview on illness behavior, SOMS, SCL-90-R, HADS, Questions on Life Satisfaction (FLZM), health-related quality of life (EuroQoL)</p>	<p>follow-up</p> <p>No significant group differences</p>	<p>Limitation: primary outcome not specified</p>
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<p>Martin et al., 2007</p> <p>Multiple somatoform symptoms (n=140; F=105; M=35; 12% met criteria for DSM-IV somatization disorder)</p>	<p>Between- and within-groups design</p> <p>1 small-group outpatient session (3-4 hours) of CBT (n=70) vs control (standard medical care) (n=70)</p> <p>Primary outcomes: healthcare utilization (outpatient visits and</p>	<p>Primary outcome: CBT group showed greater improvement over time in somatoform symptoms (BSI-somatization) and some aspects of healthcare utilization than the control group</p> <p>Secondary outcomes: both groups showed improvement for other outcomes but did not differ significantly across groups</p>	<p>Strengths: low dropout rate</p> <p>Limitations: modest number of DSM-IV somatization disorder limits generalizability</p>
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medication) and somatoform symptoms (SOMS-7, WI, BSI-somatization)

Secondary outcomes: psychopathology severity (BDI, BSI-global severity index), sick-leave, health-related locus of control

3 assessment timepoints: baseline, 4-week and 6-month follow-ups

Schroder et al., 2012

Bodily distress syndrome (intent-to-treat n=120; F=95; M=25; 45% met criteria for DSM-IV somatization disorder)

Between- and within-groups design

9 sessions over 4 months (3.5 hour/session) CBT-based outpatient treatment (n=54) vs. enhanced usual care (letter to primary care doctors) (n=66)

Primary outcome: CBT group showed greater improvement over time than enhanced usual care

Secondary outcomes: CBT group showed greater improvement over time for every measure apart from the anxiety and depression severity score

Strengths: comprehensive CBT-based treatment

Limitations: only adults aged 20-45 were included, potentially limiting generalizability

Primary outcome:

mean change in
aggregate score on
SF-36 subscales over
time

Secondary outcomes:
SF-36, WI, SCL-90-R,
SCL-8

4 assessment
timepoints: baseline, 4-,
10- and 16-month
follow-ups

**Zonneveld et
al., 2012**

Unexplained physical
symptoms (undifferentiated
somatoform disorder and/or
chronic pain) (n=162
enrolled; F=131; M=31;
14.8% met criteria for DSM-
IV somatization disorder)

Between- and within-
groups design

20 CBT-based
outpatient trainings
over 13 weeks (n=84)
vs wait-list control
(n=72)

Primary outcomes: SF-
36 physical and mental
component summaries

Secondary outcomes:

Primary outcomes: the intervention group
showed greater improvement from
baseline to 13-weeks than the control
group in the physical, but not the mental
health score.

Secondary outcomes: the intervention
group showed greater improvement from
baseline to 13-weeks than the control
group in somatization, physical
functioning, social functioning, and
general health

Strength: well-defined
treatment

Limitations: modest number
of DSM-IV somatization
disorder limits
generalizability

other SF-36 scales,
SCL-90-R

2 assessment
timepoints for both
groups: baseline, 13
weeks after baseline

2 additional
assessment timepoints
for intervention group:
3- and 12-month follow-
ups

**Schroder et
al., 2013**

Multiple somatoform
symptoms (intent-to-treat
n=134; F=103; M=31; 11.2%
met criteria for DSM-IV
somatization disorder)

Between- and within-
groups design

8-week CBT (n=49) vs.
8-week progressive
muscle relaxation
(n=41) vs wait-list
control (n=43) (all
outpatient)

Primary outcome:
SOMS-7

Secondary outcomes:

Both intervention groups showed
improvement over time for most
measures

CBT group showed better treatment
effects in SOMS-7 severity and symptom
count and SF-12 mental well-being than
wait-list control

No significant differences in treatment
effects between CBT and progressive
muscle relaxation or between progressive
muscle relaxation and wait-list controls.

Strengths: comparison of
two relevant CBT-based
treatments, use of wait-list
control

Limitations: modest number
of DSM-IV somatization
disorder limits
generalizability

mental and physical health (SF-12, HADS), healthcare utilization

3 assessment timepoints: baseline, 3- and 6-month follow-ups

Van Ravesteijn et al., 2013

Medically unexplained symptoms (n=125; F=94; M=31; 13% met criteria for DSM-IV somatization disorder)

Between- and within-groups design

8 weeks of outpatient mindfulness group therapy and at-home practice + enhanced usual care (n=64) vs enhanced usual care only (control) (n=61)

Primary outcome: no difference between mindfulness treatment and control groups

Secondary outcomes: the mindfulness group showed improvement in somatization symptoms (PHQ-15) at the end of treatment and the 9-month follow-up. The control showed no improvement.

Strength: well-defined treatment

Limitations: modest number of DSM-IV somatization disorder limits generalizability

Primary outcome: general health status (EuroQoL) compared at the end of treatment

Secondary outcomes: mental and physical health (SF-36, PHQ-15, PHQ-9, WI), mindfulness (Five Facet Mindfulness

Questionnaire),
Healthcare Utilization

3 assessment
timepoints: baseline,
post-treatment, 9-
month follow-up

Abbreviations: CBT, Cognitive Behavioral Therapy; SFD, somatoform disorder; F, female; M, male; SSS, Severity of Somatic Symptoms scale; SF-36, 36-item Short-Form Health Survey; SF-12, 12-item Short-Form Health Survey; BDI, Beck Depression Inventory; BAI, Beck Anxiety Inventory; PCI, Psychiatric Consultation Intervention; CGI-SD, Clinical Global Impression for Somatization Disorder; WI, Whiteley Index; SCL-8, Symptom Checklist-8; SCL-90-R, Symptom Checklist-90-Revised; DSM, Diagnostic and Statistics Manual; SOMS, Screening for Somatoform Symptoms; BSI, Brief Symptoms Inventory; HADS, Hospital Anxiety and Depression Scale; PHQ, Patient Health Questionnaire
