Klinisch epidemiologisch onderzoek (evidence-based medicine) bij SOLK

Onderstaand volgt een lijst met relevante literatuur op alfabetische volgorde van de achternaam van de auteur. De lijst is samengesteld door M.M. Klaver, voormalig neuroloog en SOLK-deskundige. De artikelen zijn gerangschikt in enkele rubrieken:

- SOLK algemeen
- Verklaringen
- Emotie-gerichte therapie
- Relatie vroegkinderlijk trauma en SOLK
- Asymptomatische bevindingen
- Ineffectieve Behandelingen
- Kosten bij SOLK

SOLK algemeen

Dessel van N, Boeft den M, Wouden van der JC, et al. Non-pharmacological interventions for somatoform disorders and medically unexplained physical symptoms (MUPS) in adults. Cochrane Database Syst Rev. 2014 Nov 1;(11) :CD011142.

Compared with usual care or waiting list conditions, CBT reduced somatic symptoms, with a small effect and substantial differences in effects between CBT studies. Compared with enhanced or structured care, psychological therapies generally were not more effective for most of the outcomes.

Gini G, Pozzoli T. Association Between Bullying and Psychosomatic Problems: A Meta-analysis. Pediatrics. 2009;123(3):1059-65.

The association between involvement in bullying and psychosomatic problems was demonstrated.

Bekhuis E, Gol J, Burton C, Rosmalen J. Patients' descriptions of the relation between physical symptoms and negative emotions: a qualitative analysis of primary care consultations. Br J Gen Pract 2020 Jan 30;70(691):e78-e85.

Patients attributed symptom exacerbation to overstepping physical limits and/or negative emotions. Patients described different strategies in gaining control over symptom exacerbations.

Patiënten geven stress aan als er hen geluisterd wordt, niet als de arts er naar vraagt.

Barends H, Walstock, Botman F, et al. Patients' experiences with fluctuations in persistent physical symptoms: a qualitative study. BMJ Open 2020;10:e035833.

Physical symptoms can be attributed to emotions when patients introduce this link themselves, but this link tends to be denied when introduced by the GP.

Negatieve emoties en over de grens gaan spelen een rol bij SOLK fluctuaties.

Graham-Engeland JE, Sin NL, Smyth JM, et al. Negative and positive affect as predictors of inflammation: Timing matters. Brain Behav Immun. 2018 Nov;74:222-230.

We assessed how measures of negative and positive affect (NA and PA) multiple time points per day via ecological momentary assessment [EMA], as opposed to questionnaires that rely on recall over a longer period, are related to levels of peripheral inflammation. Negative mood more proximal to the blood draw was associated with the cytokine composite.

Actuele emoties activeren ontstekingsactiviteit bij reuma; vragenlijst emoties doen dit niet.

Horst van der HE, olde Hartman TC. Communiceren met patiënten met SOLK. Kunst en kunde. Ned Tijdschr Geneeskd. 2019;163: D2840.

The provision of an explanation which is acceptable to the doctor as well as to the patient is an important condition for drawing up and carrying out therapy. If the doctor expresses confidence in the prognosis and outcome, this has a favourable effect on the development of the symptoms.

Klaver-Krol EG, Rasker JJ, Klaver MM, Ten Klooster PM, Zwarts MJ. Fibromyalgia: Increased reactivity of the muscle membrane and a role of central regulation. Clin Neurophysiol. 2019 Jan;130(1):12-19.

In fibromyalgia patients, the muscle membrane propagation speed increases independently of the force load or amount of muscle activity produced. When adopting a limb position, the patients show an augmented muscle membrane reaction, suggesting deregulation from higher neural centers.

Klaver-Krol EG, Hermens HJ, Vermeulen RC, Klaver MM, Luyten H, Henriquez NR, Zwarts MJ. Chronic fatigue syndrome: Abnormally fast muscle fiber conduction in the membranes of motor units at low static force load. Clin Neurophysiol. 2021 Jan 29;132(4):967-974.

Our results suggest disturbed muscle membrane function in CFS patients, in their motor units involved in low force generation. Central neural deregulation may contribute to this disturbance.

NHG-standaard Somatisch Onvoldoende verklaarde Lichamelijke Klachten (SOLK). Huisarts Wet 2013;56(5):222-30. olde Hartman TC, et al.

Sitnikova K, Pret-Oskam R, Dijkstra-Kersten SMA, et al. Management of patients with persistent medically unexplained symptoms: a descriptive study. BMC Fam Pract. 2018;19(1):1-9.

The least frequently used strategies were exploration of all complaint dimensions (i.e. somatic, cognitive, emotional, behavioural and social) (3.5%) and referral to a psychologist (0.5%) or psychiatrist (0.1%).

Nimnuan C, Hotopf M,Wessely S. Medically unexplained symptoms: an epidemiological study in seven specialities. J Psychosom Res. 2001;51(1):361-7.

This study aimed to estimate the prevalence and risk factors for medically unexplained symptoms across a variety of specialities. Medically unexplained symptoms are common across general/internal medicine and represent the most common diagnosis in some specialities.

Verklaringen

Burton C, Lucassen P, Aamland A, olde Hartman TC. Op weg naar een ideale uitleg. Huisarts Wet 2015;58(9):468-70.

Huisartsen moeten vaardiger worden in het geven van een uitleg over onbegrepen klachten. Ze kunnen de hier gepresenteerde elementen voor een ideale uitleg gebruiken als hulpmiddel.

Ravenzwaaij van J , olde Hartman TC, van Ravesteijn H, et al. Explanatory Models of Medically Unexplained Symptoms: A Qualitative Analysis of the Literature. Ment Health Fam Med. 2010 Dec;7(4):223-31.

We distinguished nine specific explanatory models of MUS in the literature and one metamodel. Although GPs often face difficulties when providing explanations to patients with MUS, these explanatory models may be of use in daily medical practice.

Terpstra T,Gol JM , Lucassen P et al. Explanations for Medically Unexplained Symptoms: A Qualitative Study on GPs in Daily Practice Consultations. Fam Pract. 2020 Feb 19;37(1):124-130.

Although explanations for MUS are provided in most MUS consultations, there seems room for improving the explanations given in these consultations.

De meest gebruikte SOLK verklaringen betreffen de arousal verklaring met gestolde vecht-vlucht-bevriesreacties, het verwijde aandachtsfilter met sensitisatie, de ontregelde HPA-as a.g.v. een onveilige hechting en vroegkinderlijk trauma en de laaggradige ontstekingshypothese uit de psychoneuroimmunologie. We voegen hieraan toe de verdrongen emotie verklaring, enerzijds met de verdrongen dreiging en onveilige hechting als basis (Sarno, Schubiner) en anderzijds de verdrongen emotie met wortels in het negatieve zelfbeeld en met een limbische disfunctie als gevolg (Klaver).

Emotie-gerichte therapie

Abbass A, Lumley MA, Town J, et al. Short-term psychodynamic psychotherapy for functional somatic disorders: A systematic review and meta-analysis of within-treatment effects. J Psychosom Res. 2021 Jun;145:110473.

37 trials (22 pre-post studies and 15 RCTs) were identified totaling 2094 patients for functional somatic disorders (=MUS=SOLK). Across all studies, somatic symptoms improved significantly from pre-treatment. STPP results in moderate to large improvements in multiple outcome domains that are sustained in long-term follow-up.

Lumley MA, Schubiner H. Emotional Awareness and Expression Therapy for Chronic Pain: Rationale, Principles and Techniques, Evidence, and Critical Review. Curr Rheumatol Rep. 2019 May 23;21(7):30.

This article presents the rationale for EAET, describes its principles and techniques, reviews its development and early testing as well as recent clinical trials, and critically analyzes the evidence base. The largest and best conducted trial found superiority of EAET over cognitive-behavioral therapy for fibromyalgia.

Lumley MA, Schubiner H. Psychological Therapy for Centralized Pain: An Integrative Assessment and Treatment Model. Psychosom Med. 2019 Feb/Mar;81(2):114-124.

Intensive short-term dynamic psychotherapy (ISTDP) helps patients identify and experience unconscious emotions and then facilitating patients' understanding of the role such emotions and conflicts play in their symptoms, including pain.

Ashar YK, Gordon A, Schubiner H, et al. Effect of Pain Reprocessing Therapy vs Placebo and Usual Care for Patients With Chronic Back Pain: A Randomized Clinical Trial. JAMA Psychiatry. 2021 Sep 29:e212669.

Of 151 total participants, 33 of 50 participants (66%) randomized to PRT were pain-free or nearly pain-free at posttreatment, compared with 10 of 51 participants (20%) randomized to placebo and 5 of 50 participants (10%) randomized to usual care. Treatment effects were maintained at 1-year follow-up. Treatment effects were maintained at 1-year follow-up, with a mean pain score of 1.51 in the PRT group, 2.79 in the placebo group, and 3.00 in the usual care group. Longitudinal fMRI showed (1) reduced responses to evoked back pain in the anterior midcingulate and the anterior prefrontal cortex for PRT vs placebo; (2) reduced responses in the anterior insula for PRT vs usual care. Psychological treatment centered on changing patients' beliefs about the causes and threat value of pain may provide substantial and durable pain relief for people with chronic back pain.

Cooper A, Abbass A, Town J. Implementing a Psychotherapy Service for Medically Unexplained Symptoms in a Primary Care Setting. J Clin Med. 2017 Nov 29;6(12).

ISTDP is an integrated form of psychotherapy encompassing *cognitive, behavioral and emotional elements at varying degrees*, tailored to the patient's capacities and specific needs. ISTDP therapy model focuses on the bodily experience of emotions and how emotions can convert into bodily symptoms.

Donnino MW, Thompson GS, Mehta S, et al. Psychophysiologic symptom relief therapy for chronic back pain: a pilot randomized controlled trial. Pain Rep. 2021 Sep 23;6(3):e959.

A three-armed, randomized trial for adults with nonspecific chronic back pain compared psychophysiologic symptom relief therapy (PSRT) with usual care and an active comparator (mindfulness-based stress reduction [MBSR]). At 26 weeks, 63.6% of the PSRT arm reported being pain free compared with 25.0% and 16.7% in MBSR and usual care arms, respectively. Conclusion: Psychophysiologic symptom relief therapy is a feasible and potentially highly beneficial treatment for patients with nonspecific back pain.

Garnefski N, van Rood Y, de Roos C, Kraaij V. Relationships Between Traumatic Life Events, Cognitive Emotion Regulation Strategies, and Somatic Complaints. J Clin Psychol Med Settings. 2017 Jun;24(2):144-151.

Somatic complaints were significantly related to the reporting of past negative events (such as loss and maltreatment) that still produce strong and negative feelings in the present. Somatic complaints were also significantly related to maladaptive cognitive coping strategies, such as blaming oneself, ruminating, and catastrophizing about negative life events.

Hsu MC, Schubiner H, Lumley MA, et al. Sustained pain reduction through affective self-awareness in fibromyalgia: a randomized controlled trial. J Gen Intern Med. 2010 Oct;25(10):1064-70.

This RCT studied 45 women with fibromyalgia and randomly assigned to Affective Self-Awareness or a waitlist control group. The intervention group had significantly lower pain severity and higher self-reported physical function at 6 months compared to the control group.

Klaver MM. Het effect van stressortherapie door psychosomatische therapeuten bij patiënten met SOLK. Beweegreden 2013;9(4):28-33.

Het effect was 80% objectieve verbetering op 4DKL, SF 36 en VAS en 90% subjectieve verbetering.

Klaver MM. Hints naar de psychologische oorzaak van lichamelijke klachten. Beweegreden 2014;10(2):28-31.

Patiënten met SOLK uiten hints die toegang geven tot de psychologische oorzaak van deze klachten. Het herkennen van hints is een aparte competentie en vraagt volle aandacht met gericht luisteren en goed kijken.

Lumley MA, Schubiner H, et al. Emotional awareness and expression therapy, cognitive behavioral therapy, and education for fibromyalgia: a cluster-randomized controlled trial. Pain 2017;158(12):2354-2363.

Emotional awareness and expression related to psychosocial adversity and conflict was well received, was more effective than a basic educational intervention and had some advantages over CBT on pain.

Schubiner H, Lumley M, Gordon A. Neural Pathway Pain — A Call for More Accurate Diagnoses. Practical Pain Management 2017.

Schubiner H. Chronic Pain Reconsidered, A New Role for Therapists. Psychotherapy Networker, September/October 2018.

Renna ME, Fresco DM, Mennin DS. Emotion Regulation Therapy and Its Potential Role in the Treatment of Chronic Stress-Related Pathology Across Disorders. Chronic Stress (Thousand Oaks). 2020 Feb13;4

Emotion regulation therapy is a theoretically derived treatment that is based upon affective science. Open and randomized controlled trials have demonstrated considerable preliminary evidence for the utility of emotion regulation therapy and its proposed mechanisms in treating the distress conditions.

Ravensberg van D, Berkel van L, Heuvel van den S, et al. Minder medicijngebruik, minder arbeidsverzuim, minder klachten. Beweegreden 2011 maart;7(1):17-20.

De scores op de 4DKL, SF 36 en VAS zijn significant verbeterd. Het behandeldoel is bij 85% bereikt, de klachten zijn subjectief bij 90% sterk afgenomen. Medicatiegebruik en arbeidsverzuim zijn significant afgenomen

Yarns BC, Lumley MA, Cassidy JT et al. Emotional Awareness and Expression Therapy Achieves Greater Pain Reduction than Cognitive Behavioral Therapy in Older Adults with Chronic Musculoskeletal Pain: A Preliminary Randomized Comparison Trial. Pain Med. 2020 Nov 1;21(11):2811-2822.
EAET emphasizes emotional processing in the etiology of chronic pain. EAET produced significantly lower pain severity than CBT. Psychotherapy may achieve substantial pain reduction if pain neuroscience principles are emphasized and avoided emotions are processed.

Town JM, Lomax V, Abbass AA, Hardy G. The role of emotion in psychotherapeutic change for medically unexplained symptoms. Psychother Res. 2019 Jan;29(1):86-98.
Key tenets to an ISTDP formulation of MUS include the inadvertent blockage of emotional processing and associated anxiety being channelled into the body, manifesting as somatic distress.

Relatie vroegkinderlijk trauma en SOLK

de Graaf R, ten Have M, van Dorsselaer S. De psychische gezondheid van de Nederlandse bevolking. NEMESIS-2: Opzet en eerste resultaten. Trimbos-instituut, Utrecht, 2010.
Centraal staat de relatie tussen kindertrauma, SOLK en ziekte, waarbij opvalt dat kindertrauma niet allen verbonden is met niet aantoonbare klachten (SOLK), maar ook met aantoonbare ziekte. Des te meer reden om SOLK en verdrongen emoties op de agenda van de artsen te krijgen.

Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. Am J Prev Med. 1998 May;14(4):245-58.
We found a strong graded relationship between the breadth of exposure to abuse or household dysfunction during childhood and multiple risk factors for several of the leading causes of death in adults.

Garnefski N, van Rood Y, de Roos C, Kraaij V. Relationships Between Traumatic Life Events, Cognitive Emotion Regulation Strategies, and Somatic Complaints. J Clin Psychol Med Settings. 2017 Jun;24(2):144-151.
Present somatic complaints related significantly past negative events (such as loss and maltreatment) to strong and negative feelings in the present. Somatic complaints were also significantly related to a maladaptive cognitive coping strategies, such as blaming oneself, ruminating, and catastrophizing.

Hotopf M, Carr S, Mayou R, et al. Why do children have chronic abdominal pain, and what happens to them when they grow up? Population based cohort study. BMJ. 1998 Apr 18;316(7139):1196-200.
Children with persistent abdominal pain were more likely to suffer from psychiatric disorders in

adulthood. The mothers had higher neuroticism scores.
Children with abdominal pain do not necessarily continue to experience physical symptoms into adulthood.

Hotopf M, Mayou R, Wadsworth M, Wessely S. Temporal relationships between physical symptoms and psychiatric disorder. Results from a national birth cohort. Br J Psychiatry. 1998 Sep;173:255-61.

Psychiatric disorder is strongly related to physical symptoms. The direction of causality may operate in both directions. Assuming a causal relationship, psychiatric disorder (including sub-threshold disorders) could account for at most 40% of cases of multiple physical symptoms.

Kaiser RH, Clegg R, Goer F, et al. Childhood stress, grown-up brain networks: corticolimbic correlates of threat-related early life stress and adult stress response. Psychol Med. 2018 May;48(7):1157-1166.
Exposure to threat-related early life stress has been related to vulnerability for stress-related disorders in adulthood, putatively via disrupted corticolimbic circuits involved in stress response and regulation. Results show decrease of prefrontal activity and increase of limbic activity.

Kraynak TE, Marsland AL, Hanson JL, Gianaros PJ. Retrospectively reported childhood physical abuse, systemic inflammation, and resting corticolimbic connectivity in midlife adults. Brain Behav Immun. 2019 Nov;82:203-213.
Childhood abuse confers risk for psychopathology and pathophysiology in midlife through intermediate pathways that remain unclear. Consistent with recent neurobiological models of early life influences on disease risk across the lifespan, associations between childhood physical abuse and adulthood corticolimbic circuit functionality may be partially explained by inflammatory processes

Nicol AL, Sieberg CB, Clauw DJ, et al. The association between a history of lifetime traumatic events and pain severity, physical function, and affective distress in patients with chronic pain. J Pain 2016;17:1334–48.
Multivariate logistic regression showed that individuals with a history of abuse (n=470; 15.25%) had greater depression, greater anxiety, worse physical functioning, greater pain severity, worse pain interference, higher catastrophizing, and higher scores on the Fibromyalgia Survey criteria.

Noteboom A, Ten Have M, de Graaf R, et al. The long-lasting impact of childhood trauma on adult chronic physical disorders. J Psychiatr Res. 2021 Apr;136:87-94.
Childhood trauma predicts the development of adult physical disorders, even after controlling for sociodemographic and lifestyle factors. This association is substantially influenced by mental health disorders. Treatment programs for childhood trauma should include interventions aimed at enhancing both mental and physical health.

Sachs-Ericsson NJ, Sheffler JL, et al. When emotional pain becomes physical: Adverse childhood experiences, pain, and the role of mood and anxiety disorders. J Clin Psych. 2017;73(10):1403-1428.
Using data from the 10-year longitudinal Adverse Childhood Experiences (ACE) study, the authors

demonstrate the link between child abuse and trauma of various types and the development of physical pain in adult life. People with 4 or more ACEs had twice as many painful conditions as those with no ACEs.

You DS, Meagher MW. Childhood adversity and pain sensitization. Psychosom Med. 2016;78:1084-1093.

The high adversity group showed greater temporal summation of second pain sensitization whereas the low-adversity group showed minimal sensitization. The high adversity group also showed blunted cardiac and skin conductance responses. These findings suggest that enhancement of central sensitization may provide a mechanism underlying the pain hypersensitivity and chronicity linked to childhood adversity.

Asymptomatische bevindingen

Brinjikji W et al. Systematic Literature Review of Imaging Features of Spinal Degeneration in Asymptomatic Populations. Am J Neurorad 2015; 36:811–16.
Thirty-three articles reporting imaging findings for 3110 asymptomatic individuals met our study inclusion criteria. The prevalence of disk degeneration in asymptomatic individuals increased from 37% of 20-year-old individuals to 96% of 80-year-old individuals. Disk protrusion prevalence increased from 29% of those 20 years of age to 43% of those 80 years of age.

Englund M, Guermazi A, Gale D, et al. Incidental meniscal findings on knee MRI in middle-aged and elderly persons. NEJM 2008;359(11):1108-15.
Study of knee MRIs from 991 subjects, ages 50-90 years old. The findings indicated that meniscal tears are common in the general population and increases with age. However, 61% of the subjects who had meniscal tears in their knees had not had any pain, aching, or stiffness during the previous month.

Jensen MC, Brant-Zawadzki MN, Obuchowski N et al. Magnetic resonance imaging of the lumbar spine in people without back pain. NEJM 1994; 331(2): 69-73.
A classic study in which MRIs were performed on 98 people with no back pain. They found that only 36% of these people had normal spines, the other 64% had various evidence of disc degeneration. The discovery by MRI of bulges or protrusions in people with low back pain may frequently be coincidental.

Simotas AC, Shen T. Neck pain in demolition derby drivers. Arch Phys Med Rehabil. 2005 Apr;86(4) :693-6.
These data suggest that demolition derby drivers sustain less chronic neck pain after multiple car collision events than might otherwise be expected. Further study of this unique population of car drivers may contribute to understanding whiplash disorder.

Silvis ML, Mosher TJ, Smetana BS, et al. High prevalence of pelvic and hip magnetic resonance imaging findings in asymptomatic collegiate and professional hockey players. Am J Sports Med. 2011 Apr;39(4):715-21.
The study included 21 professional and 18 collegiate hockey players. Participants underwent 3-T MRI evaluation of the pelvis and hips. Given the high prevalence of MRI findings in asymptomatic hockey players, it is necessary to cautiously interpret the significance of these findings in association with clinical presentation."

Ineffectieve Behandelingen

Bijl Dick. Het Pillenprobleem. Amsterdam University Press;2018. ISBN 9789462985322

Chaparro LE, Furlan AD, Deshpande A, et al. Opioids compared with placebo or other treatments for chronic low back pain: an update of the Cochrane Review. Spine 2014 Apr 1;39(7):556- 63.
The effectiveness and safety of long-term opioid therapy for treatment of CLBP remains unproven.

Jonas WB, Crawford C, Colloca L, et al . Are Invasive Procedures Effective for Chronic Pain? A Systematic Review. Pain Med 2019;20(7):1281-93.
There is little evidence for the specific efficacy beyond sham for invasive procedures in chronic pain. A moderate amount of evidence does not support the use of invasive procedures as compared with sham procedures for patients with chronic back or knee pain.

Kallmes DF, Comstock BA, Heagerty PJ, et al. A randomized trial of vertebroplasty for osteoporotic spinal fractures. N Engl J Med. 2009 Aug 6;361(6):569-79.
Improvements in pain and pain-related disability associated with osteoporotic compression fractures in patients treated with vertebroplasty were similar to the improvements in the simulated procedure (control) group.

Kirkley A, Birmingham TB, Litchfield RB, et al. A Randomized trial of arthroscopic surgery for osteoarthritis of the knee. NEJM 2008;359(11):1097-107.
RCT comparing 86 patients who had surgery for osteoarthritis of the knee with 86 who underwent physical and medical therapy. There was no difference in outcome between the two groups.

Lian J, Mohamadi A, Chan JJ, et al. Comparative efficacy and safety of nonsurgical treatment options for enthesopathy of the extensor carpi radialis brevis: A Systematic review and meta-analysis of randomized placebo-controlled trials. Am J Sports Med. 2019 Oct;47(12):3019-3029.
This meta-analysis of tennis elbow found that in 36 RCTs with placebo controls, most patients experienced pain resolution after receiving placebo within 4 weeks of follow-up.

Traeger AC, Lee H, Hubscher M, et al. Effect of Intensive Patient Education vs Placebo Patient Education on Outcomes in Patients With Acute Low Back Pain. A Randomized Clinical Trial. JAMA Neurol. 2019;76(2):161-69.
In this randomized clinical trial of 202 adults with acute low back pain from Sydney, Australia, adding intensive patient education to first-line care of patients was no better at improving pain outcomes than a placebo intervention.

Kosten bij SOLK

Barsky AJ, Orav EJ, Bates DW. Somatization increases medical utilization and costs independent of psychiatric and medical comorbidity. Arch Gen Psychiatry 2005 Aug;62(8):903-10.

20% MUS, medical consumption twice as high in MUS, Annual U.S. cost of PPD estimated at $256 billion in 2005.

Boeft den M, Twisk JW, Terluin B et al. The association between medically unexplained physical symptoms and health care use over two years and the influence of depressive and anxiety disorders and personality traits: a longitudinal study. BMC Health Serv Res. 2016 Mar 22;16:100.

We found a strong positive association between MUPS and health care use. We found that depressive disorders and neuroticism had the strongest influence on the association between MUPS and HCU over time.

Gaskin DJ, Richard P. The economic costs of pain in the United States. J Pain. 2012;13(8):715-24.

In 2008, according to the Medical Expenditure Panel Survey (MEPS), about 100 million adults in the United States were affected by chronic pain, including joint pain or arthritis. Using the 2008 MEPS, we estimated 1) the portion of total U.S. health care costs attributable to pain; and 2) the annual costs of pain associated with lower worker productivity. We found that the total costs ranged from $560 to $635 billion in 2010 dollars.

Hiller W, Fichter MM, Rief W. A controlled treatment study of somatoform disorders including analysis of healthcare utilization and cost-effectiveness. J Psychosom Res. 2003 Apr;54(4):369-80.

Their outpatient plus inpatient charges during the 2 years prior to treatment were about 2.2-fold higher than for average patients of the health system.

Konnopka A, Schaefert R, Heinrich S et al. Economics of medically unexplained symptoms: a systematic review of the literature. Psychother Psychosom. 2012;81(5):265-75.

Cost-of-illness studies found annual excess health care costs of somatizing patients between 432 and 5,353 USD in 2006 values. Indirect costs were estimated to about 18,000 USD per year.