

# Current Psychosomatic Practice

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## Key Words

Psychosomatic medicine · Stress · Allostatic load · Depression · Anxiety · Illness behavior · Patient-reported outcomes · Psychotherapy · Clinimetrics · Diagnostic Criteria for Psychosomatic Research

## Abstract

Psychosomatic research has advanced over the past decades in dealing with complex biopsychosocial phenomena and may provide new effective modalities of patient care. Among psychosocial variables affecting individual vulnerability, course, and outcome of any medical disease, the role of chronic stress (allostatic load/overload) has emerged as a crucial factor. Assessment strategies include the Diagnostic Criteria for Psychosomatic Research. They are presented here in an updated version based on insights derived from studies carried out so far and encompass allostatic overload, type A behavior, alexithymia, the spectrum of maladaptive illness behavior, demoralization, irritable mood, and somatic symptoms secondary to a psychiatric disorder. Macro-analysis is a helpful tool for identifying the relationships between biological and psychosocial variables and the individual targets for medical intervention. The personalized and holistic approach to the patient includes integration of medical and psychological therapies in all phases of illness. In this respect, the development of a new psychotherapeu-

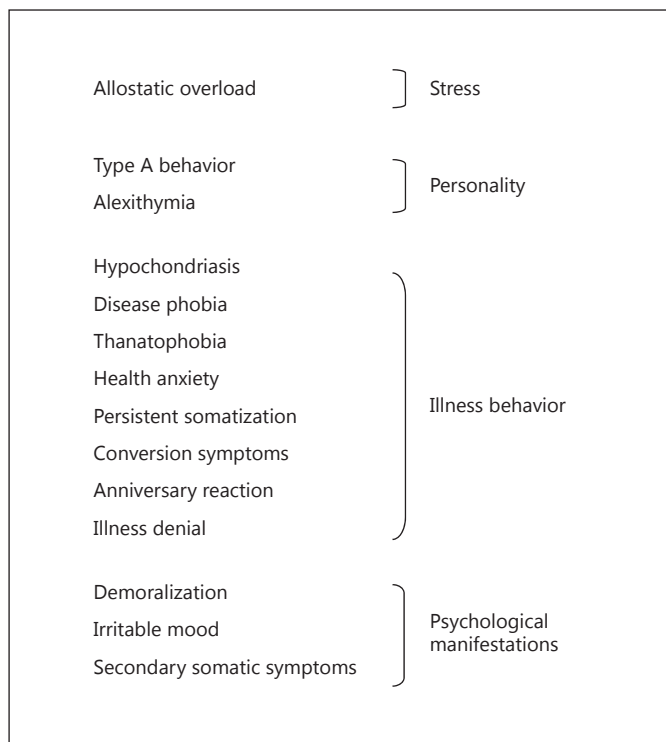
tic modality, Well-Being Therapy, seems to be promising. The growth of subspecialties, such as psychooncology and psychodermatology, drives towards the multidisciplinary organization of health care to overcome artificial boundaries. There have been major transformations in health care needs in the past decades. From psychosomatic medicine, a land of innovative hypotheses and trends, many indications for changes in the current practice of medicine are now at hand. The aim of this critical review is to outline current and potential clinical applications of psychosomatic methods.

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## Introduction

Psychosomatic medicine is a wide interdisciplinary field that is concerned with the interaction of biological, psychological, and social factors in regulating the balance between health and disease [1–4]. It provides a conceptual framework for:

- 1 scientific investigations on the role of psychosocial factors affecting individual vulnerability, course, and outcome of any type of medical disease;
- 2 the personalized and holistic approach to the patient, adding psychosocial assessment to the standard medical examination;



**Fig. 1.** DCPR, revised version.

- 3 the integration of psychological and psychiatric therapies in the prevention, treatment, and rehabilitation of medical disease, and
- 4 multidisciplinary organization of health care that overcomes the artificial boundaries of traditional medical specialties.

Psychosomatic research, in the past decades, has resulted in an impressive body of knowledge, with contributions published in all major medical journals and in specifically dedicated journals such as *Psychosomatic Medicine*, *Psychosomatics*, *Psychotherapy and Psychosomatics*, and the *Journal of Psychosomatic Research*. Its application has generated a number of subdisciplines: psychooncology, psychonephrology, psychoneuroendocrinology, psychoneurogastroenterology, behavioral cardiology, psychoimmunology, psychodermatology, and others, which in turn have developed clinical services, scientific societies, and medical journals [5].

In this context, the Diagnostic Criteria for Psychosomatic Research (DCPR) have helped to translate psychosocial variables that derived from psychosomatic research into operational tools. The DCPR, introduced in 1995 [6], were tested in various clinical settings. Their value in the psychosomatic assessment, regardless of the ‘organic’ or

‘functional’ nature of the illness, has been largely documented [7–9].

The aim of this critical review is to outline current and potential clinical applications of psychosomatic methods. It includes contributions, particularly from review articles, that are most relevant to clinical practice. For the first time, the DCPR are reported in a revised version based on insights derived from their use in a large number of patients and settings [7, 8]. This version includes the diagnostic criteria for two additional syndromes, allostatic overload and hypochondriasis. The DCPR will be described in relation to the clinical domains to which they pertain (fig. 1).

Issues concerned with disciplines related to psychosomatic medicine, such as behavioral medicine [10], health psychology [11], and mind-body medicine [12, 13], are not included in this paper.

### Psychosocial Factors and Individual Vulnerability

A number of factors have been implied to modulate individual vulnerability to disease.

#### *Life Events and Allostatic Load*

The role of early developmental factors in the susceptibility to disease has been a frequent object of psychosomatic investigation [14]. Using animal models, events such as premature separation from the mother have consistently resulted in pathophysiological modifications, mainly an increased HPA axis activation [15]. They may render the human individual more vulnerable to the effects of stress later in life. There has been also considerable interest in the association of physical and sexual abuse in childhood with medical disorders later in life, yet the evidence currently available does not allow any firm conclusion [14]. Children exposed to maltreatment showed changes (smaller volume of the prefrontal cortex, increased activation of the HPA axis, and elevation in levels of inflammation) that persisted in adult age [16].

That stressful life events may be followed by ill health has been a common clinical observation. The introduction of structured methods of data collection and control groups has allowed substantiation of the link between life events in the year preceding the onset of symptoms and a number of medical disorders, encompassing endocrine, cardiovascular, respiratory, gastrointestinal, autoimmune, skin, and neoplastic disease [17–19]. Indeed, within a multifactorial frame of reference, stressful life events may affect the regulatory mechanisms of neuroen-

**Table 1.** Allostatic overload: revised version of the DCPR (criteria A and B are required)

Criterion A	The presence of a current identifiable source of distress in the form of recent life events and/or chronic stress; the stressor is judged to tax or exceed the individual coping skills when its full nature and full circumstances are evaluated
Criterion B	The stressor is associated with 1 or more of the following 3 features, which have occurred within 6 months after the onset of the stressor: (1) At least 2 of the following symptoms: difficulty falling asleep, restless sleep, early morning awakening, lack of energy, dizziness, generalized anxiety, irritability, sadness, demoralization (2) Significant impairment in social or occupational functioning (3) Significant impairment in environmental mastery (feeling overwhelmed by the demands of everyday life)

doctrine-immune functions in a number of ways [17–19]. Stress at large may result in responses mediated by a variety of neurotransmitters, proinflammatory cytokines, and hormones [20, 21], both in the brain and the periphery. In turn, chronic inflammation may play a key role in the pathogenesis of major disorders such as diabetes, cardiovascular disease, and cancer [22, 23].

On the other hand, subtle and long-standing life situations should not too readily be dismissed as minor and negligible, since chronic, daily life stresses may be experienced by the individual as taxing or exceeding his/her coping skills. McEwen [15] proposed a formulation of the relationship between stress and the processes leading to disease based on the concept of allostasis, the ability of the organism to achieve stability through change. In this view, allostatic load reflects the cumulative effects of stressful experiences in daily life. When the cost of chronic exposure to fluctuating and heightened neural or neuroendocrine responses exceeds the coping resources of an individual, allostatic overload ensues. Allostatic overload can be assessed by specific clinimetric criteria [24] that underwent validation [25–28]. They are now included in the revised version of the DCPR (table 1).

Biological parameters of allostatic load have been linked to cognitive and physical functioning and mortality [15, 29]. Regions of the prefrontal cortex, hippocampus, and amygdala are particularly affected [30].

#### *Health Attitudes and Behavior*

Behaviors relevant to health mainly relate to physical activity, diet, sleep, smoking, drinking, and drug consumption. These behavioral factors are interrelated and can have a synergistic effect on morbidity and mortality [31, 32]. However, changing the unhealthy behavior of an individual is always difficult. For instance, about 75% of patients with cardiovascular diseases were unable to

change their bad habits despite the fact that they were informed about the risk factors [33]. Similarly, knowledge about the risks associated with certain health-damaging behaviors is not necessarily associated with their avoidance. A survey on young adults in 8 countries throughout Europe [34] showed that those who engaged more in drinking and smoking were just as much aware of the negative consequences of these health-damaging behaviors as people who did not engage in such behaviors. In contrast, beliefs about the positive effects of health-protective behaviors were strongly associated with their practice [34].

#### *Social Support*

The complex interplay among environmental, social, familial, psychological, and physiological processes is likely to become embodied in the brain to influence health throughout life [35]. Dimensions of social relationships such as social network composition, social support, frequency of social interactions, and the experience of loneliness and isolation have long been linked to aspects of physical and mental health [35]. In this line, prospective population studies have substantiated the role of social support in relation to mortality, psychiatric and physical morbidity, recovery, and adjustment to chronic disease [36]. Interventions designed to improve the social environment and interpersonal relationships have been successful in facilitating psychosocial adjustment to medical disorders [36].

#### *Psychological Well-Being*

Several studies have suggested that positive affect plays a buffering role in coping with stress and has a favorable impact on disease course [37, 38]. In recent years, there has been increasing interest in the concept of euthymia, a state characterized by psychological flexibility, resilience

**Table 2.** Type A behavior: revised version of the DCPR (criterion A is required)

Criterion A	At least 5 of the 9 following characteristics should be present: (1) Excessive degree of involvement in work and other activities subject to deadlines (2) Steady and pervasive sense of urgency (3) Display of motor-expressive features (rapid and explosive speech, abrupt body movements, tensing of facial muscles, hand gestures) indicating a sense of being under pressure of time (4) Hostility and cynicism (5) Irritability (6) Tendency to speed up physical activities (7) Tendency to speed up mental activities (8) High desire for achievement and recognition (9) High competitiveness
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**Table 3.** Alexithymia: revised version of the DCPR (criterion A is required)

Criterion A	At least 3 of the following 6 characteristics should be present: (1) Inability to use appropriate words to describe emotions (2) Tendency to describe details instead of feelings (e.g. circumstances surrounding an event rather than the feelings) (3) Lack of a rich fantasy life (4) Thought content associated more with external events rather than fantasy or emotions (5) Unawareness of common somatic reactions that accompany the experience of a variety of feelings (6) Occasional but violent and often inappropriate outbursts of affective behavior
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to stress, and lack of affective disturbances [39]. Preclinical evidence suggests that conditions of persistent stress may elicit a pattern of conserved transcriptional response to adversity, in which there is an increased expression of proinflammatory genes and a concurrent decreased expression of type 1 interferon innate antiviral response [40]. Such a pattern has been implicated in the pathophysiology of cancer and cardiovascular disease [22, 41]. Frederickson et al. [42] showed that individuals with high psychological well-being presented reduced gene expression of conserved transcriptional response to adversity, suggesting a potential protective role of psychological well-being in a number of medical disorders.

#### *Spirituality*

Religiosity and spirituality (broadly defined as any feelings, thoughts, experiences, and behaviors that arise from the search for the 'sacred') have been a matter of growing interest in epidemiological research [43]. Religiosity appeared to have a favorable effect on survival that is independent from behavioral factors, negative affect, and degree of social support [43, 44].

#### *Personality*

The notion that personality variables can affect vulnerability to specific diseases was prevalent in the first phase of the development of psychosomatic medicine (1930–1960) and was particularly influenced by psychoanalytic investigators who believed that personality profiles would underlay specific 'psychosomatic diseases'. This hypothesis was not supported by subsequent research [1]. Two personality constructs that can potentially affect general vulnerability to disease, type A behavior (table 2) and alexithymia (table 3), have attracted considerable attention, but their relationship with health issues is still controversial [45]. Type A behavior is derived from the 'specific emotional complex' observed in patients with heart conditions in the late 1950s [46] and has been recognized in 36.1% of subjects at risk of coronary heart disease and in 10.8% of patients with noncardiac diseases [47]. Alexithymia appears to be linked to increased risk and worsened outcome of medical conditions such as cardiovascular diseases, gastrointestinal disorders, cancer, and altered immune response to stress [48–51].

Personality variables may deeply affect how a patient views illness, what it means to him/her, and his/her interactions with others, including medical staff. The neurobiology of personality features, such as reward dependence and novelty seeking [52], alexithymia [53], and type A behavior [54], provides valuable pathophysiological insights into the tendency to develop symptoms and abnormal illness behavior in the setting of medical disease.

#### *Implications for Clinical Practice*

Assessment of psychosocial factors potentially influencing individual vulnerability to illness is often omitted by the primary care physician or the medical specialist [4]. This is the result of a reductionist approach that has deeply influenced medicine [4, 11, 12, 17, 55, 56].

Psychosocial variables affecting illness vulnerability may encompass:

- 1 a temporal relationship between life events and symptom onset or relapse;
- 2 the presence of grief reactions, including the loss of a body part or bodily function;
- 3 the perception by a person of an environment as exceeding his/her resources (i.e. allostatic load/overload). Often patients deny a relationship between their allostatic load and symptomatology, since they are unaware of the latency between stress accumulation and symptom onset ('I had bowel symptoms yesterday, which was an easy day at work, and not the previous days, which were awful'). Symptom worsening during weekends and vacation time is a common manifestation of this latency [57];
- 4 interpersonal relationships providing a buffering role for stress, and
- 5 psychological assets and well-being.

This type of information may be crucial in managing patients with unexplained somatic symptoms [58], with difficult patient-doctor relationships [59], or with borderline/mild hormone abnormalities (e.g. slightly elevated prolactin levels) [60]. It may be obtained by expert interviewing and/or self-rating inventories and/or techniques of self-observation (i.e. self-monitoring of daily activities and recording of the observed experiences in a diary) [61]. Psychosomatic medicine has provided lasting contributions to improving history taking in medical settings [62].

#### **Psychosomatic Assessment and Individualized Care**

The unified concept of health and disease of Engel [55, 63] allowed illness to be viewed as the result of interacting mechanisms at the cellular, tissue, organismic, interpersonal, and environmental levels. Hinkle [64] in 1967 added human ecology as a core characterization of psychosomatic medicine, anticipating ecological issues such as the growing importance of environmental toxic factors and the social inequalities that affect health [65].

Tinetti and Fried [66] suggested that the aim of the treatment should be the attainment of individual goals and the identification of all modifiable biological and nonbiological factors and pointed out: 'A primary focus on disease, given the changed health needs of patients, inadvertently leads to under-treatment, overtreatment, or mistreatment' [66].

The psychosomatic evaluation includes important psychosocial variables according to clinimetric principles [67–73]. The term 'clinimetrics' was introduced by a supporter of the psychosomatic movement, Alvan R. Feinstein, in 1982, to indicate a domain concerned with indexes, rating scales, and other expressions that are used to describe or measure symptoms, physical signs, and other clinical phenomena [67]. The psychosomatic approach requires a comprehensive assessment, satisfactory patient-doctor interaction, and the application of individualized care [5, 61, 74].

#### *Quality of Life and Patient-Reported Outcomes*

Psychosomatic medicine pioneered the self-rated evaluation of psychological status in medical conditions [61]. Rating scales such as the Symptom Check List 90 [75], the Hospital Anxiety and Depression Scale [76], and the Symptom Questionnaire [77] were extensively used in medical settings [68, 78]. Evaluations of distress and well-being anticipated interest in quality of life assessments and patient-reported outcomes. While there is neither a precise nor an agreed definition of quality of life, research in this area seeks essentially two kinds of information: the functional status of the individual and the patient's appraisal of his/her own health. Indeed, the subjective perception of health status (e.g. lack of well-being, demoralization, difficulties fulfilling personal and family responsibilities) is as valid as that of the clinician in evaluating outcomes [79–81]. The recent emphasis on patient-reported outcomes, any report coming directly from patients about how they function or feel in relation to a health condition or its therapy [82, 83], is in line with the psychosomatic and clinimetric approach [84].

**Table 4.** Hypochondriasis: revised version of the DCPR (criteria A–D are required)

Criterion A	Fears of having, or the idea of having, a serious disease based on misinterpretation of bodily symptoms
Criterion B	The preoccupations persist despite adequate medical evaluation and reassurance, with opportunity for discussion and clarification
Criterion C	The duration of the disturbance is at least 6 months
Criterion D	The preoccupations cause marked distress and/or impairment in social and occupational functioning

**Table 5.** Disease phobia: revised version of the DCPR (criteria A–C are required)

Criterion A	Persistent, unfounded fear of suffering from a specific disease (e.g. AIDS, cancer), with doubts remaining despite adequate medical examination and reassurance
Criterion B	Fears tend to manifest themselves in the form of attacks rather than in constant, chronic worries as in hypochondriasis; panic attacks may be an associated feature
Criterion C	The object of fear does not change with time, and the duration of symptoms exceeds 6 months

**Table 6.** Thanatophobia: revised version of the DCPR (criteria A–C are required)

Criterion A	At least 2 attacks in the past 6 months of impending death and/or conviction of dying soon, without being in a threatening situation or in real danger; adequate appraisal of the situation and management to be followed (if any) has been provided by a physician, with an opportunity for discussion and clarification
Criterion B	Marked and persistent fear and avoidance of news that reminds of death (e.g. funerals, obituary notices); exposure to these stimuli almost invariably provokes an immediate anxiety response
Criterion C	Avoidance, anxious anticipation, and distress interfere markedly with the level of functioning

### *Illness Behavior*

Mechanic and Volkart [85] defined illness behavior as ‘the ways in which given symptoms may be differentially perceived, evaluated, and acted (or not acted) upon by different kinds of persons’. Subsequently, Mechanic [86] provided the following specification: ‘Illness behavior refers to the varying ways individuals respond to bodily indications, how they monitor internal states, define and interpret symptoms, make attributions, take remedial actions and utilize various sources of informal and formal care.’ In the past decades, new lines of research have been concerned with illness perception, attendance at medical facilities, health-care-seeking behavior, and treatment adherence [87, 88].

The simple fact that, in the presence of certain physical symptoms, some persons immediately seek medical help while others wait a long time before consulting a physi-

cian determines the likelihood of early recognition of a life-threatening disease and its prompt treatment and prognosis. Thus, illness behavior is a core characterization in psychosomatic medicine and provides an explanatory model for clinical phenomena that do not find room in customary taxonomy [88].

The clinical spectrum of illness behavior encompasses a number of syndromes (fig. 1), including hypochondriasis, which was omitted in the DSM-5 classification [89]. Retaining hypochondriasis (table 4) is important since specific psychotherapeutic strategies have been developed and validated in randomized controlled trials: they were targeted to address resistance to reassurance, the key characteristic of hypochondriasis which can be favorably modified [88].

Disease phobia (table 5) and thanatophobia (table 6) may be components of a hypochondriacal syndrome, yet

**Table 7.** Health anxiety: revised version of the DCPR (criteria A and B are required)

Criterion A	A generic worry about illness, concern about pain, and bodily preoccupations (tendency to amplify somatic sensations) of less than 6 months' duration
Criterion B	Worries and fears readily respond to appropriate medical reassurance, even though new worries may ensue after some time

**Table 8.** Persistent somatization: revised version of the DCPR (criteria A and B are required)

Criterion A	Functional medical syndromes (fibromyalgia, chronic fatigue, esophageal motility disorders, nonulcer dyspepsia, irritable bowel syndrome, atypical chest pain, overactive bladder) whose duration exceeds 6 months causing distress and/or seeking medical care and/or resulting in impaired quality of life
Criterion B	Symptoms of autonomic arousal involving other organ systems (e.g. palpitations, tremor, flushing, sweating) and/or exaggerated side effects from medical therapy, indicating low threshold of pain sensation and/or high suggestibility

**Table 9.** Conversion symptoms: revised version of the DCPR (criteria A–C are required)

Criterion A	One or more symptoms or deficits affecting voluntary motor or sensory function characterized by lack of anatomical or physiological plausibility and/or absence of expected physical signs or laboratory findings and/or inconsistent clinical manifestations; if autonomic arousal or persistent bodily symptoms are present, conversion symptoms should be prominent and cause distress and/or seeking medical care and/or impaired quality of life
Criterion B	Appropriate medical evaluation uncovers no organic pathology to account for the physical complaints
Criterion C	At least 2 of the following 4 characteristics should be present: (1) Ambivalence in reporting of symptoms (e.g. the patient appears relaxed or unconcerned as he/she describes distressing symptoms) (2) Histrionic personality features (colorful and dramatic expressions, language and appearance, demanding dependency, high suggestibility, rapid mood changes) (3) Precipitation of symptoms by psychological stress (the patient is unaware of such association) (4) History of similar physical symptoms experienced by the patient, observed in someone else, or wished on someone else

they may also occur independently. Disease phobia differs from hypochondriasis in three characteristics: (1) fears concern a specific disease and are unlikely to be shifted to another disease or organ system [88]; (2) fears tend to manifest themselves in attacks rather than in constant worries as in hypochondriasis [90], and (3) disease phobia often results in the avoidance of internal and external illness-related stimuli, while hypochondriasis usually involves reassurance-seeking or checking behaviors [91]. Disease phobia was found in 19% of consultation-liaison psychiatry patients [92, 93].

Health anxiety (table 7) is characterized by worries and attitudes concerning illness and pain that are less specific

than in hypochondriasis and disease phobia and respond to medical reassurance. It frequently occurs (21–35%) among consultation-liaison psychiatry patients [92, 93].

Persistent somatization (table 8) refers to patients in whom somatic symptoms have clustered, probably due to an enhanced general sensitivity to pain and discomfort [94]. For instance, findings of altered brain-gut interactions, inflammation, and visceral hypersensitivity shed new light on the pathophysiology of irritable bowel syndrome [95, 96], and advanced brain imaging methods make the distinction between 'functional' and 'organic' increasingly blurred [97]. Persistent somatization may be associated with a variety of medical disorders [8].

**Table 10.** Anniversary reaction: revised version of the DCPR (criteria A–C are required)

Criterion A	Symptoms of autonomic arousal (e.g. palpitations, tremor, flushing, sweating) or functional syndromes (e.g. irritable bowel syndrome, fibromyalgia, atypical chest pain) or conversion symptoms causing distress and/or seeking medical care and/or impaired quality of life
Criterion B	Appropriate medical evaluation uncovers no organic pathology to account for physical symptoms
Criterion C	Symptoms began when the patient reached the age, or on the occasion of the anniversary, when a parent or very close family member developed a life-threatening illness and/or died; the patient is unaware of such association

**Table 11.** Illness denial: revised version of the DCPR (criteria A and B are required)

Criterion A	Persistent denial of having a physical disorder and needing treatment (e.g. lack of compliance, delayed seeking of medical attention for serious and persistent symptoms, counterphobic behavior) as a reaction to the symptoms, signs, diagnosis, or medical treatment of a physical illness
Criterion B	The patient has been provided with an adequate appraisal of the medical situation and management (if any) to be followed, with opportunity for discussion and clarification

Conversion symptoms (table 9) were formulated according to the criteria of Engel [98]. In a sample of 1,498 patients from various medical settings [100], DCPR conversion symptoms [6] were found in 4.5% of subjects, while DSM-IV conversion disorder [99] was found in only 0.4%. In the same study [100], anniversary reaction (table 10), which is a special form of somatization or conversion, had a prevalence of 3.6%.

Illness denial (table 11) pertains to patients who do not acknowledge the presence or severity of their illness. DCPR illness denial was found in 9% of women with breast cancer [101] and in 5% of subjects who underwent heart transplantation [102].

At variance with the DSM classification system, all the DCPR syndromes that connote the persistence of a maladaptive mode of experiencing, perceiving, evaluating, and responding to one's own health status require the fact that a doctor has provided an adequate appraisal of the situation and management to be followed (if any), with opportunity for discussion, negotiation, and clarification [103]. If a patient has not been provided with adequate information about his/her medical condition and management and develops overwhelming anxiety about his/her health, is a psychiatric diagnosis warranted as the DSM suggests? Is the problem caused by the patient or by an inadequate patient-doctor interaction?

#### *Demoralization and Irritable Mood*

There is emerging awareness that psychological symptoms which do not reach the threshold of a psychiatric disorder may also affect quality of life and entail pathophysiological and therapeutic implications. The advantage of DCPR classification is that it departs from the dichotomy between organic and functional and from the misleading and dangerous assumption that if organic factors cannot be identified there must be psychological reasons which fully explain the somatic symptomatology. The psychosomatic literature provides an endless series of examples where psychological factors could only partially account for the unexplained medical disorder [88]. In turn, the presence of an established organic cause for a medical disorder does not exclude but indeed increases the likelihood of psychological distress [4]. In this respect, two syndromes in the revised DCPR, demoralization and irritable mood, deserve to be mentioned.

The original DCPR definition of demoralization integrated the demoralization syndrome of Frank [104] and the giving up-given up complex of Schmale and Engel [105]. Demoralization and major depression can be differentiated on clinical grounds; they may occur together or independently, and major depression does not necessarily involve demoralization [106]. DCPR studies on demoralization reported very low prevalence in healthy participants (not higher than 2–5%) and a high prevalence in the medically ill (about 30%) [106]. Table 12 shows the



**Table 12.** Demoralization: revised version of the DCPR (criteria A and B are required; criterion C is a specifier for the presence of hopelessness)

Criterion A	A feeling state characterized by the perception of being unable to cope with some pressing problems and/or of lack of adequate support from others (helplessness); the individual maintains the capacity to react
Criterion B	The feeling state is prolonged and generalized (duration of at least 1 month)
Criterion C	A feeling state characterized by the consciousness of having failed to meet expectations associated with the conviction that there are no solutions for current problems and difficulties (hopelessness)

**Table 13.** Irritable mood: revised version of the DCPR (criteria A and B are required)

Criterion A	A feeling state characterized by irritability which may be experienced as brief episodes (in particular circumstances) or may be prolonged and generalized; it requires an increased effort of control over temper or results in irascible verbal or behavioral outbursts
Criterion B	The experience of irritability is always unpleasant, and overt manifestations lack the cathartic effect of justified outbursts of anger

revised DCPR criteria for demoralization and its two different expressions: helplessness (the individual maintains the capacity to react but lacks adequate support) and hopelessness (when the individual feels he/she alone is responsible for the situation and there is nothing he/she or anyone else can do to overcome the problem) [107]. Hopelessness/giving up is more likely to be linked to depressive illness and may provide a severity connotation to the diagnosis of major depressive disorder. Both hopelessness and helplessness have been found to involve the serotonergic and noradrenergic systems [108].

Table 13 shows the revised DCPR criteria for irritable mood. Irritability may be part of psychiatric syndromes; it is always unpleasant for the individual, and its overt manifestation lacks a cathartic effect [109]. Several studies found a significant impact of irritable mood on the course of medical disorders as well as on the adoption of unhealthy lifestyles [110–114]. Prevalence rates of DCPR irritable mood of about 10–15% were found in medical settings, including patients with myocardial infarction, heart transplantation, functional gastrointestinal disturbances, cancer, and skin diseases [8] and up to 46% in patients with endocrine disorders [115].

#### *Psychiatric Disorders*

Psychiatric illness appears to be strongly associated with physical diseases: mental disorders increase the risk for communicable and noncommunicable diseases; many health conditions increase the risk for mental disturban-

es; comorbidity complicates recognition and treatment of medical disorders [116].

There is evidence that psychiatric disturbances in the course of medical disease are substantially different from those that can be found in psychiatric settings in terms of clinical characteristics, response to treatment, and prognosis [116, 117]. At times, mood and anxiety disturbances precede the onset of symptoms of a medical condition [117]. The potential relationship between medical disorders and psychiatric symptoms ranges from a purely coincidental occurrence to a direct causal role of organic factors. The latter may be subsumed under the rubric of symptomatic affective disorder whose key feature is the resolution of psychiatric disturbances upon specific treatment of the organic condition [118].

As to depression, to reach a correct diagnosis in primary care is a difficult task, and a meta-analysis [119] indicated that there are more false positives than either missed or correctly identified cases. Major depression has emerged as an extremely important source of comorbidity in medical disorders. In particular:

- 1 Depression may increase susceptibility to medical illness. Depression is characterized by a sustained inflammatory state, and increased concentrations of inflammatory markers might have a role in mediating the risk for cardiovascular and neoplastic disease [22, 41, 120]. It has been suggested to also be a marker of disease severity. For example, in pituitary-dependent Cushing's disease, the presence of depression was as-

**Table 14.** Somatic symptoms secondary to a psychiatric disorder: revised version of the DCPR (criteria A–C are required)

Criterion A	Somatic symptoms that cause distress and/or seeking medical care and/or impaired quality of life
Criterion B	Appropriate medical evaluation uncovers no organic pathology to account for the physical complaints
Criterion C	A psychiatric disorder (which includes somatic symptoms within its manifestations) preceded the onset of somatic symptoms (e.g. panic disorder preceding cardiac symptoms)

sociated with the severity of the clinical presentation [121] and entailed prognostic value [122].

- 2 Medically unexplained symptoms are extremely common in medical practice. Their association with depression has been consistent, regardless of the design of the study [94, 123]. Depressed patients tend to have more somatic symptoms than nondepressed individuals [94, 123].
- 3 The presence of depressive symptoms in association with chronic medical illness was found to affect quality of life and social functioning and lead to increased health care utilization [123].
- 4 Depression was found to have an impact on compliance [124]. Many cases of ‘suicide by default’ in the medical population may mask a major depressive disorder [125]. Examples include diabetic patients who stop taking insulin, those who resume strenuous work after myocardial infarction, and those who withdraw from chronic hemodialysis [125].
- 5 Depression may be a risk factor for nonsuicide mortality [123], particularly in the elderly [126].

The relationship between anxiety disorders and medical illness has also been found to entail important clinical implications [127–129]. The revised DCPR diagnosis of somatic symptoms secondary to a psychiatric disorder (table 14) acknowledges their hierarchical relationship to psychiatric disorders, particularly mood and anxiety disturbances (e.g. symptoms of autonomic arousal may frequently be a consequence of anxiety) [130, 131]. With the DCPR syndrome of somatic symptoms secondary to a psychiatric disorder the physician formulates the hypothesis that the bulk of somatic symptomatology may remit upon the remission of the psychiatric disorder (e.g. successful treatment of anxiety may entail a decrease or disappearance of its somatic manifestations) [128].

As discussed in detail elsewhere [88, 132], the DSM-5 diagnosis of ‘somatic symptom and related disorders’ as well as ‘adjustment disorders’ have limited clinical utility in psychosomatic medicine.

### *Implications for Clinical Practice*

Emmelkamp et al. [133] introduced the concept of macroanalysis (a relationship between co-occurring syndromes and problems is established on the basis of where treatment should start first). Macroanalysis begins from the assumption that in most cases there are functional relationships among different problem areas and that the targets of treatment may vary during the course of disturbances. The hierarchical organization that is chosen may depend on a variety of contingent factors (e.g. urgency, availability of treatment choices) that also include the patient’s preferences and priorities. Macroanalysis is a tool for the therapist that can also be used to inform the patient about the relationship between different problem areas and induce motivation to change. Macroanalysis should be supplemented by microanalysis: a detailed analysis of the onset and course of the complaints and the circumstances that worsen symptoms [61].

A comprehensive assessment of psychosocial aspects of medical disease cannot be equated to a standard psychiatric evaluation [61] and may be particularly suitable in the case of the following:

- 1 Medically unexplained symptoms. Patients with medically unexplained symptoms suffer from patterns of persistent bodily complaints that lack an underlying physical pathology despite intensive diagnostic efforts. Fourteen common physical symptoms are responsible for almost half of all primary care visits [58, 134], but only 10–15% are found to be caused by an organic illness over a 1-year period. Prevalence rates between 16 and 32% have been reported [135]. Medically unexplained symptoms cause costs in health care that are comparable to mental health problems like depression or anxiety [135]. These patients often spend more days in bed than patients with severe major medical disorders [136].
- 2 Partial response to treatment/incomplete recovery. Quality of life may often be compromised even when the patient is apparently doing well. An example may

**Table 15.** Nonspecific therapeutic ingredients

Full availability of the therapist for specific times	Attention
Opportunity for the patient to ventilate thoughts and feelings	Disclosure
An emotionally charged, confiding relationship with a helping person	High arousal
A plausible explanation of the symptoms	Interpretation
The active participation of patient and therapist in a ritual or procedure that is believed by both to be the means of restoring patient health	Rituals

be provided by patients successfully treated for endocrine disorders and their incomplete recovery in terms of amelioration of quality of life [137]. Research on quality of life has emphasized the discrepancies in health perceptions between patients, their companions, and their treating physicians [80].

- 3 Psychiatric complications in medical illness. A timely identification is warranted in medical settings of psychiatric disturbances which need specific treatments. Kornfeld [138] illustrated that the recognition of psychiatric complications, such as delirium in coronary care units, yielded some changes in medical care and organization. As important is the awareness of psychiatric side effects caused by medical drugs [139].
- 4 Maladaptive illness behavior. Several manifestations of illness behavior (from hypochondriasis to illness denial) may hinder the prevention and treatment of medical disorders [87, 88], as outlined above.

### Integration of Psychological Care into Medical Treatment

The main levels of psychosomatic intervention are as follows: prevention strategies and health behavior modifications, type of approach to patient care, and specific psychotherapeutic and psychopharmacological management in the setting of medical disease.

#### *Health Behavior Modifications*

Switching the general population to healthy lifestyles would be a major source of prevention for most prevalent conditions such as diabetes, obesity, and cardiovascular illness [140–143]. Addressing the origins of disparities in physical and mental health care early in life may produce greater effects than attempting to modify health-related behaviors later [144]. The exponential spending on preventive medication justified by the potential long-term benefits to a small segment of the population has been challenged [145], whereas the benefits of modifying life-

style by population-based measures are increasingly demonstrated [145–147]. However, at present almost all of health care spending is directed at the traditional biomedically oriented care.

#### *General Psychosomatic Approach*

Levels of intervention may range from reassurance and effective communication (whether in primary care or in medical specialties) to the integration of specific psychotherapeutic and psychopharmacological treatments within the medical management [148]. Research on psychotherapy [4] has disclosed common therapeutic ingredients that may be specific or nonspecific [4] and are relevant to any physician-patient relationship (table 15). There is experimental evidence, mainly from studies concerned with placebo, that the mesolimbic dopaminergic system is activated when a patient expects clinical improvement [108]. These findings shed new light on classic psychosomatic studies exploring patient-doctor interactions [149, 150]. Expectations, preferences, motivation, and quality of patient-doctor interactions are examples of variables that may affect treatment outcomes [151–153]. In a pioneer study [154], a small amount of individual attention and education (about what to expect during the postsurgical period) by the anesthetist resulted in a significantly lower requirement of postsurgery analgesia and a shorter hospital stay compared to a control group submitted to usual postsurgical care. When these nonspecific therapeutic ingredients are missing or the patient displays a counterproductive behavior, drugs are unlikely to be superior to placebo [151–153, 155, 156].

#### *Psychotherapeutic Interventions*

Different psychotherapeutic techniques (psychoeducational interventions, stress management procedures, cognitive-behavioral therapy, brief dynamic therapy, family therapy, and group interventions) have been applied to medical patients in controlled investigations [147, 157–160]. Areas that have been extensively explored are cardiovascular [120, 161–165], gastrointestinal [166],

pulmonary [167], neurological disorders [168], chronic pain [169, 170], diabetes [171, 172], HIV/AIDS [173, 174], and cancer [175–177]. These interventions may improve lifestyle and self-management, coping, quality of life, distress (especially depression and anxiety), course of physical illness, treatment adherence, and reduction in utilization of medical services [157–177]. Dealing with the psychological distress of family caregivers is another important area of action [178].

For many years, abnormal illness behavior has been viewed mainly as an expression of personality predisposition and considered to be refractory to treatment by psychotherapeutic methods, but several controlled studies indicated that hypochondriasis is a treatable condition by the use of simple cognitive strategies [160].

Another emerging area of intervention is concerned with strategies increasing psychological well-being in all phases of medical illness [179–181], from prevention (decreased well-being has been associated with unhealthy behaviors) [182, 183] to rehabilitation (the process of rehabilitation requires the promotion of well-being and changes in lifestyle) [184]. Increasing well-being by Well-Being Therapy [179, 180] may contribute to improving health attitudes and behavior, either in combination with other therapeutic strategies or as a first-line approach.

### *Psychopharmacology*

Psychotropic drugs in the setting of medical disease are often employed for purposes other than psychiatric disorders, and most prescriptions are written by primary practitioners and nonpsychiatric physicians. There has been a very rapid increase in the prescription of antidepressant drugs [185, 186], whereas the use of benzodiazepines has been relatively stable [187–189].

McEwen and Gianaros [30] remark that sleeping pills, anxiolytics, and antidepressants are employed to counteract manifestations of allostatic overload, but these agents have side effects and interactions that may be detrimental in the long term and do not entail a solution to the problems for which they are used. Any type of psychotropic drug treatment, particularly after long-term use, may increase the risk of experiencing additional psychopathology that does not necessarily subside with discontinuation of the drug and may modify the responsiveness to subsequent treatments [190, 191], leading to iatrogenic comorbidity [139, 192, 193]. While the judicious use of psychotropic drugs in the medically ill may reduce stress, promote daytime functioning, improve mood, and assist in sleep induction [194], their prolonged utilization is likely to cause problems, particularly in the case of se-

lective serotonin reuptake inhibitors and serotonin noradrenaline reuptake inhibitors [191, 195]. A psychosomatic approach to psychotropic drug prescription thus applies, on an individual basis, to a careful balance between potential benefits and adverse effects [196].

### *Implications for Clinical Practice*

Psychosomatic medicine may have a sobering effect on inappropriate prescriptions of psychotropic drugs in medical practice, with particular reference to antidepressants. The basic message sold to the physicians by pharmaceutical propaganda is that a better medical outcome could be obtained by treating depression, even in its milder forms, with readily available medications. Depression, in view of its clinical implications in the prognosis of medical disorders regardless of its actual severity, has been equated to ‘bad cholesterol’ and the use of antidepressant drugs to statins, which should not be refused to anyone as a preventive or treatment measure – well beyond their original indications [197]. While antidepressant drugs were found to be effective for treating major depression in the setting of medical disease [198, 199], their actions on improving medical outcomes have not been demonstrated [200, 201] and may rather involve side effects, interactions, and the likelihood of developing iatrogenic comorbidity [118, 190, 197, 202].

The use of macroanalysis in medical settings may provide the ground for incorporating psychosocial strategies in specific clinical situations:

- 1 the presence of psychological disturbances (e.g. demoralization, irritable mood) or of psychiatric illness (e.g. major depression, panic disorder);
- 2 refractoriness to lifestyle modifications guided by primary care or other nonpsychiatric physicians;
- 3 the presence of abnormal illness behavior (from hypochondriasis to illness denial) interfering with treatment or leading to frequent health care utilization, and
- 4 impaired quality of life and functioning not entirely justified by the medical condition.

### **Multidisciplinary Care**

There have been major transformations in health care needs [66, 203, 204]. The traditional medical specialties, based mostly on organ systems (e.g. cardiology, gastroenterology), appear to be more and more inadequate in dealing with symptoms and problems which cut across organ system subdivisions and require a comprehensive approach. There are several examples around

the world of multidisciplinary care guided by psychosomatic principles.

#### *Psychosomatic Inpatient Units*

Psychosomatic inpatient units are available mainly in Germany [205, 206], Japan [207, 208], and China [209]. The characteristics of the units vary according to the type of health system. Their aims are to provide joint medical and psychological care, which would not be possible in traditional facilities, for the prevention and treatment of chronic illness and job-related disturbances (such as burnout) [205].

#### *Consultation-Liaison Psychiatry*

Consultation-liaison psychiatry is a widespread modality for providing consultation in the general hospital [210, 211]. It is mostly geared to treat the psychiatric complications of medical illness in adults during hospitalization. Specific geriatric and pediatric psychiatric consultation services are also available [211, 212]. The existing literature indicates that the goals of consultation-liaison psychiatry (reducing the length of hospitalization and utilization of laboratory tests, providing an input on patient management, and improving social functioning after discharge) can be met, even though results considerably differ across studies [210, 213, 214]. Developments of consultation-liaison psychiatry are hindered by its modalities of assessment and treatment that follow a reductionist (psychiatric) paradigm, missing psychosocial perspectives and correlates that may affect the response to medical treatments [215, 216].

#### *Medical Consultation Services within the Mental Health System*

Medical comorbidity in psychiatric patients often goes undetected. Medical disorders may cause or exacerbate psychiatric disturbances [117, 217, 218]. Psychiatrists tend to miss the correct medical diagnosis because they may fail to think of nonpsychiatric reasons for their patients' complaints or may not have adequate instruments for detecting medical disorders [117, 217]. However, specific medical consultation services (e.g. internal medicine, endocrinology) within the mental health system have been insufficiently endorsed [219].

#### *Multidisciplinary Services*

Multidisciplinary services have been developed within specialties and subspecialties such as oncology, cardiology, dermatology, gynecology, nephrology, gastroenterology, organ transplantation, and endocrinology [219–

222]. Such services may be operated by various specialists (group approaches) or by a single specialist with a multidisciplinary background. These services address complaints that fall between disciplines and require a psychosomatic approach. In the UK, the establishment of centers within the National Health System for providing psychotherapy to patients with anxiety and depressive disorders [223] offers an example of the integration of treatments.

#### *Implications for Clinical Practice*

In health care, the product is clearly health, and the patient is one of the producers, not just a customer [224]. As a result, 'optimally efficient health production depends on a general shift of patients from their traditional roles as passive or adversarial consumers, to become producers of health jointly with their health professionals' [224].

The partnership paradigm includes both collaborative care, a patient-physician relationship in which physicians and patients make health decisions together [225], and self-management, a plan that provides patients with problem-solving skills to enhance their self-efficacy [226].

As Kroenke [227] argued, neither chronic medical nor psychiatric disorders can be managed adequately in the current environment of general practice, where the typical patient must be seen in 10–15 min or less. It is idealistic to pursue shared decision and self-management when the time for interaction is so minimal.

#### **Conclusions**

The need to include consideration of function in daily life, productivity, performance of social roles, intellectual capacity, emotional stability, and well-being has emerged as a crucial part of clinical investigation and patient care. Such awareness is far from being translated into operational steps in clinical practice, and the traditional outdated way of dealing with health problems still prevails. As Ioannidis [228] points out, influential randomized trials are generally done by and for the benefit of the industry, guidelines serve vested interests, and national and federal research funds are unable to address basic clinical questions. Even though 'personalized medicine', referred to as genomics-based knowledge, has promised to approach each patient as the biological individual he/she is, the practical applications have still a long way to go, and neglect of psychological, behavioral, and social features may actually lead to a 'depersonalized' medicine [229].

From psychosomatic medicine, many indications for change are now at hand and could lead other medical disciplines to an overdue reappraisal of evidence-based medicine, whose model clashes with clinical reality and current health care needs.

## Disclosure Statement

The authors have no conflicts of interest to declare.

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