

Chapter 14

Emotions, emotional disorders and physical disease

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1. Introduction

Our feelings are important in that they guide our behavior. More specifically, bodily sensations and negative emotions, such as anxiety and depression, guide patients to present themselves in clinical practice. In addition, these feelings are part of the database that serves the physician's medical explanation of the presented complaints. The physician's interpretation, however, may be complicated by the following circumstances. On the one hand, negative emotions are accompanied by bodily sensations and by physiological responses that under certain conditions may affect our health. On the other hand, illnesses also produce bodily sensations and are accompanied with negative emotions. Patients often base their judgement of physiological change on their present level of anxiety or depression rather than on their objective physiological state. Therefore, it is not always obvious how to interpret the bodily sensations that guide patients to present themselves in clinical practice. Occasionally, the physician is confronted with a poor fit between the patient's pattern of symptoms and the accepted illness syndromes. At this point it is important to note that models of the human body that are being used in medicine are quite different from theories used in psychology to explain people's feelings, thinking and actions. In medicine, the body is seen as a set of lawful subsystems and identification of disease categories guide the search for pathological causes. Interventions with some agent or action are aimed at restoring the balance of the subsystem. In psychology, bodily sensations and emotions are considered to be results of cognitive processes in which perception, attention, and interpretation may play an important mediating role. The purpose of the present chapter is to outline these psychological processes with respect to feelings and physical illnesses in adults.

2. Sensations, emotions and their components

In Euro-American culture, there is consensus among adults to describe as emotions subjective feelings such as happiness, surprise, fear, sadness, anger and disgust. Also, there is general agreement that feelings such as pain, fatigue, hunger, thirst, itching and sexual arousal are not emotions and rather would be described as bodily sensations. It is difficult to determine, however, how bodily sensations and emotions might be distinguished. First, both types of feelings are controlled by similar psychological processes. Next, the subjective and private nature of both feelings makes objectivation by means of a gold standard rather difficult. Finally, bodily sensations and negative emotions, such as for instance pain and fear, may be intertwined and reinforce each other.

To clarify this issue we depart from a description of the components involved in both types of feelings. Generally speaking feelings are thought to be made up of three components, namely an internal bodily response, a cognitive appraisal and a behavioral reaction. Cognitive appraisal is thought to be central in bodily sensations and emotions. Recent theories suppose that cognitive appraisal is composed of two different processing systems, namely automatic processes directly linking physiological and behavioral aspects (automatic, fast, preconscious evaluation) and controlled appraisal processes (strategic, slow, ongoing and high awareness). It is important to note here that patients in their report of sensations and emotions are necessarily limited to the latter controlled appraisal processes (what they think about) or to a description of the result of the automatic, reflex-like, processes.

Let us first consider the involvement of the physiological, cognitive and behavioral reaction components in bodily sensations. The fast, automatic appraisal system screens all incoming stimuli for their valence or emotional importance, even before a detailed analysis of their perceptual characteristics takes place. The result of this evaluative system primes general

strategic action tendencies, such as approach and avoidance. The system is biologically wired, it operates largely at a subcortical level and is not dependent upon conscious processing of stimuli. However, learning experiences may determine which stimuli may engage this system and/or to what extent this is done. In the case of, for instance, a sudden occurring pain stimulus, there is an automatic, cognitive appraisal of the internal sensation arising from an activation of pain receptors. The receptors may activate true reflexes at a spinal level, but pain will generally also prime a motivational system, implying attentional, cognitive and behavioral processes that are functionally organized to facilitate escape and/or avoidance. One may conceptualize this as unlearned motives that we share with other animals, but the same sensations may engage the system differently depending on the individual (LeDoux, 1996). For example, some patients will respond in a more avoidant-defensive way to a pain stimulus than others. The result of this automatic appraisal process will influence the individual's conscious, strategic cognitive appraisals (what they think). In addition, the latter appraisals are also shaped by earlier experiences, what has been observed in others or was told to them. This is reflected in the way people describe sensations by referring to objects or events; a burning, piercing or stabbing pain, ringing in the ears, and a peppery taste. Another example that learning is involved in sensations such as pain, is the difficulty young children have in describing the location of their pain.

The same components are thought to be involved in emotions. With respect to a negative emotion such as fear there is an automatic as well as strategic cognitive appraisal of a situation as dangerous (e.g. risk of being hit by a car, prospect of undergoing an aversive medical procedure), internal bodily responses especially those involving the autonomic nervous system (e.g. heart beat, sweating) and a reaction (e.g. emotional expression, avoidant behavior such as running away or distraction). The individual's cognitive appraisal is formed by his or her unique learning history of past experiences with similar situations, such as, for instance, earlier experience with

traffic accidents or medical situations. Cognitive appraisal steers the extent to which a stimulus or a situation elicits an emotion. The role of learning explains the variation in emotional reactions among individuals and the fact that within an individual the same emotion may be aroused by a variety of external events.

One attempt to distinguish between sensations and emotions, let us say between acute pain and fear, is to propose that central to pain is an awareness of an **internal** sensation arising from a physical stimulus (activation of the pain receptors) and that central to fear is the appraisal of an **external** event as dangerous (risk of being hit by a car, prospect of undergoing surgery). Thus, physiological reactions are the eliciting primary stimuli in observed bodily sensations, while they have a secondary function in the recognition of emotion eliciting events. However, this discriminative feature is not as clear-cut as it may seem. For example, feelings of hunger may to some extent be determined by external stimuli (watching food), while sometimes emotions (anxiety, depression) have no obvious external trigger. Because bodily sensations and emotions both share the components of physiological reactions, automatic and strategic cognitive appraisals, and reaction tendencies, it is no wonder that current definitions of pain, such as proposed by the International Association for the Study of Pain (IASP), describe it as an emotion. So, differences between them have to be sought in the weight of the components involved, rather than in discrete, discriminative features.

3. From emotion to illness

3.1 Perception, emotion and bodily sensations

The sensory perception of visual, auditory, olfactory and thermal stimuli has been studied extensively in experimental psychology. Stimulus recognition has been found to be lawful in nature and related to intensity, frequency and duration of the applied physical stimulus. For

example, it was found with respect to the intensity of a painful stimulus that under experimentally controlled conditions, people seem to have rather uniform thresholds at which heat becomes painful (about 46 Celcius). Quite in contrast with the aforementioned controlled experimental condition is the fact that people in daily life conditions have poor ability to assess their heart rate, body temperature, nasal congestion, muscle tension, breathing rate, and other internal processes. This leaves substantial room for psychological and social factors to operate. For instance, most people with blood pressure above the hypertensive threshold (140 mm Hg systolic, 90 mm Hg diasystolic) are not aware of this. In many illnesses, such as asthma or cardiovascular disease, there is poor or even absent association between critical physiological parameters of the disease and subjective symptoms, while the association between psychological measures and symptoms is much higher. The question arises which cognitive processes can account for this.

Individual differences in symptom perception may be explained in the amount of attention people pay to their internal states. Pennebaker (1982) demonstrated that people are less likely to notice bodily sensations in an exciting and appealing environment. Those who are socially isolated, keep house for a living, live alone or hold boring jobs tend to notice more physical symptoms. The role of distraction from environmental stimuli might be easily observed in the amount of coughing in an audience at the more boring parts of a movie or theatre play. However, environmental stimuli have to compete with individual factors such as knowledge about diseases and related monitoring and fear of bodily sensations.

The more subtle or ambiguous the physiological cues, the more subjects must rely on common sense beliefs about how their bodies are functioning. This brings us to another modulating variable, namely the conceptualization or cognitive representation of illness people hold. It may be acquired through personal experiences, the social environment and the media. Lay people's illness theories or explanatory models include information about the label of the

illness, the symptoms, its cause, duration, and consequences. One might think of these models as prototypes that help us to direct our attention to bodily sensations, to organize the information that was obtained, and to evaluate and apprehend it. Meyer, Leventhal and Gutmann (1985) demonstrated that hypertensives, although there was no valid symptom indicative for their condition, searched for and eventually found a 'symptom' to represent their disorder. In a cancer patient who holds the belief that he has a rapidly advancing disease, ambiguous feelings of pain and fatigue may confirm the interpretation of a progression of the cancer. The same symptoms in someone who believes to suffer from Chronic Fatigue Syndrome or Fybromyalgia may pave his or her way to visit an outpatient clinic for internal medicine.

The combined role of attention to bodily sensations, illness conceptualizations and apprehension of bodily sensations can be seen in a phenomenon common in medical school. As medical students learn about the symptoms of various diseases, a substantial proportion of them come to believe that they have contracted one of these illnesses. Facilitating factors in 'medical student's disease' are social isolation, learning a cognitive framework of symptoms and diseases, examination stress and fatigue.

Emotional processes play a role in symptom perception through biasing both attention and interpretation. For example, normal subjects scoring high on the disposition of neuroticism (that is, describing themselves as nervous, apprehensive, irritable, overly sensitive, and emotionally labile and with a negative self-view) show an elevated level of subjective complaints. This is because they (1) are more likely to attend to and perceive normal internal physical sensations and minor aches; and (2) tend to experience them in a negative way, that is, as potentially harmful (Watson and Pennebaker, 1989). An extreme form of apprehension, implying both processes, has been established in patients suffering from somatoform or anxiety disorders. Anxiety is generated when a person afflicted by these conditions perceives relatively

mild sensations such as dizziness or palpitations. Dizziness might be seen as an alarming signal of imminent fainting, and palpitations as a preliminary to a heart attack. Maladaptive is the vicious circle between the hypersensitivity to bodily sensations, catastrophic cognitions regarding these sensations, and heightened physiological arousal.

3.2 Emotional regulation and disease

Emotions arise when the impact of events forces us to modify or maintain a certain situation. Fear as a reaction to threat provokes action tendencies toward escape and avoidance or confronting the threat. Sadness as a reaction to a lost goal or person prompts action tendencies to seek comfort and social support or the abandonment of further strivings. At the root of all emotions lies the appraisal of certain events, finding things to be pleasant or unpleasant (also see Frijda, 1986). Awareness of emotions, the skill to recognize and describe emotions and their components in oneself and others, is the result of a life long learning process. Emotions play a crucial role in our lives in that they inform us about our physical, psychological and social states. As such, positive as well as negative emotions provide us with information that helps us to regulate our behavior and that of others. The regulative function of emotion may not come to force and affect health in many ways. Firstly, some individuals are not aware of or mislabel their emotional state. In these cases, it is not the positive or negative valence of the emotion per se that is thought to be pathogenic, but their level of awareness (Lane and Schwartz, 1987). An unarticulated and low level of emotional awareness is found in people who experience only body sensations or action tendencies, but are unable to verbally describe their emotional experience. The latter condition, also called alexithymia, has been frequently documented in people with ill health. Secondly, some people maintain disabling beliefs about the function of emotions. For example, the layperson's belief that positive emotions heal while negative emotions are

pathogenic may result in oppressive effects of self-blame. A patient with a catastrophic illness who cannot be expected to feel calm or happy while he or she has to deal with existential questions, lifestyle changes, medical treatments, pain and fatigue, may blame oneself for exacerbating its physical condition further. Thirdly, emotions have certain physiological concomitants that may affect the probability of becoming ill and/or the progression of certain diseases. For example, persons high on anxiety, depression and hostility have been described as disease prone in general. More specifically, both the chronic propensity to hostility and feeling deeply exhausted appear to be risk factors for cardiovascular disease (Booth-Kewley and Friedman, 1987; Appels, Kop, Meesters, Markusse, Golombeck and Falger, 1994). Emotional states may, in and of themselves, affect the immune system. Irwin, Daniels, Smith Bloom and Weiner (1987) observed that both depression and bereavement are associated with changes in lymphocyte proliferation as well as impairments in the ability of NK cells to kill tumor targets. This latter function, NK cell cytotoxicity, is important in protecting against viruses as well as cancer cells.

4. Clinical states of negative emotion

Negative emotions, such as anxiety and depression, are part of the way in which we deal with everyday life. Anxiety is adaptive in that it helps an individual to anticipate and avoid danger, while depression may enforce someone to come to terms with loss. When these emotions are excessive and enduring or experienced in inappropriate situations, they may interfere with everyday functioning and become a clinical problem (also see Power and Dalgeish, 1997). Clinical anxiety and depression are the most common problems encountered by mental health professionals. A rough estimate for all anxiety disorders is about 4-8 per 100 annual prevalence (Weissman, 1988). The rates of prevalence of clinical depression in medical patients range from

5% to 10 % for primary care patients and from 6% to 14% for medical patients (Katon and Schulberg, 1992). In Western industrialized countries the rate of depression among women is about twice the rate among men. The onset and course of clinical anxiety and depression have been shown to relate to historical, biological, psychological and social variables. These include a family history of affective disorders or alcoholism, early parental loss or severe neglect, disturbances in neuroendocrine functioning, recent negative life events, interpersonal deficits resulting in lack of intimate relationships and social support. Physiological, cognitive and behavioral signs for anxiety and depression do overlap substantially (also see Gelder, Grath & Mayou, 1994).

4.1 Anxiety

The somatic symptoms of anxiety reflect a physiological 'fight or flight' response that prepares the body for activity by increasing heart rate, blood pressure, muscle blood flow, palmar sweating and so on. The cognitive component of anxiety is composed of two related elements, an unaware selective attention to threat relevant information (attentional bias) and a stream of relatively uncontrollable threat related thoughts (worrying). The behavioral component consists of behaviors whose primary function is to avoid threat. There is substantial evidence that in many patients with anxiety disorders these components form a somatic-cognitive-behavioral loop. For instance, focusing on bodily changes with subsequent worrying about somatic symptoms, overestimation of threat, and avoidance of fear related situations or events makes the patient more vulnerable to experience arousal related bodily changes and so on (see Table 1). In addition somatic, cognitive and behavioral components, separately and interactively, contribute to the severity and form of the disorder itself. A central mechanism in the maintenance of anxiety disorders is the patient's overestimation and avoidance of threat stimuli. Effective psychological

therapies all center around the breaking of the vicious circle 'physiological arousal - worry and overestimation of threat - avoidance of threat stimuli' by means of guided and graded or prolonged exposure of threat stimuli. Of recent date are cognitive behavioral therapies in which one component is aimed at the identification of the maladaptive cognitions and their replacement with more veridical benign cognitions, and the other component consists of graded exposure exercises to extinguish the physiological arousal symptoms and to facilitate cognitive changes (Rachman, 1998).

 Table 1. Psychological factors in maladaptive anxiety: a vicious circle model

<----->		
physiological <----->	cognitive	<-----> behavioral
increase heart rate sweating muscle tension	attention bias, focus on bodily internal sensations, worrying, overestimation of threat	avoidance of external fear stimuli, reassurance seeking

Subtypes of clinical anxiety are diagnosed according to the degree in which the specific physiological, cognitive and behavioral components are involved. In one of the most dominant psychiatric classification systems, DSM-IV (APA, 1994), thirteen different anxiety disorders are distinguished. For illustrative purposes, a description will be given of the diagnostic categories panic disorder, specific phobia and social phobia.

A panic attack is a discrete period between 5 and 20 minutes in which there is the sudden onset of intense apprehension, fearfulness, or terror, often associated with feeling of impending doom. Panic attacks are frequently experienced within the general population. For patients to be diagnosed as panic disorder, it is necessary that they report panic attacks as follows: firstly,

discrete and unexpected onset of periods of intense fear with accompanying symptoms such as dyspnoea, palpitations or accelerated heart rate, chest pain, dizziness, paresthesias (physiological component), and secondly, persistent concern or worry about these attacks (cognitive component). The latter concern causes patients with panic disorder to often seek reassurance from their physician or treatment in emergency rooms. Patients experiencing panic attacks may have extensive medical tests in the emergency room to rule out heart attack or coronary disease. About 30 % of patients who present to the emergency room with chest pain meet criteria for panic disorder, regardless of actual coronary state (Fleet, Maarchand, Burelle and Beitman, 1994). It is the worrying and catastrophising about the bodily sensations experienced that differentiates clinical from non-clinical panic. In current psychological theories panic attacks are considered to be the result from the misappraisal of internal events such as bodily sensations. Sensations are misinterpreted as a sign of an immediate impending disaster such as suffocating, having a heart attack or collapsing.

The essential feature of specific phobia is the marked and persistent fear of clearly circumscribed objects or situations. Exposure to the stimulus invariably provokes an immediate anxiety reaction (physiological component). The psychiatric diagnosis is appropriate if fear, worrying about the encounter of phobic stimuli (cognitive component) and avoidance (behavioral component) impair daily functioning markedly. A subtype of special interest to medicine is blood-injury phobia defined as fear of blood, needles, injections or medical and dental treatments. It is one of the most prevalent fears within community samples. Through causing avoidance of medical and surgical procedures this condition can threaten life. When exposed to blood-injury stimuli common physiological reactions in these phobic patients are bradycardia, decreased blood pressure, fainting, dizziness and nausea. There is substantive evidence that blood-injury fears can be effectively treated by exposure-based methods.

Social phobia is characterized by a persistent fear and/or avoidance of one or more social or performance situations in which the person is exposed to possible scrutiny by others and fears that he or she may do something to or act in a way that will be humiliating or embarrassing. Apart from the avoidance of social situations (behavioral component), patients often worry (cognitive component) about visible somatic fear symptoms such as trembling, flushing or sweating (physiological component). Epidemiologic data demonstrate that about one-quarter of social phobics have alcohol-related problems and suggest that social phobics may be at risk for later depression.

Noteworthy in these and other anxiety disorders is the substantial overlap in the physiological, cognitive and behavioral components involved. Categorical classification facilitates communication between clinicians and researchers, but is limited in that it reflects only the most overt symptoms. In addition, comorbidity studies have demonstrated that chances of finding other anxiety or mood disorders in patients diagnosed with primary anxiety disorders are very high. These findings led to psychological theories, in which anxiety is conceptualized as a complex multifaceted phenomenon in which the different components are interacting (Barlow, 1988).

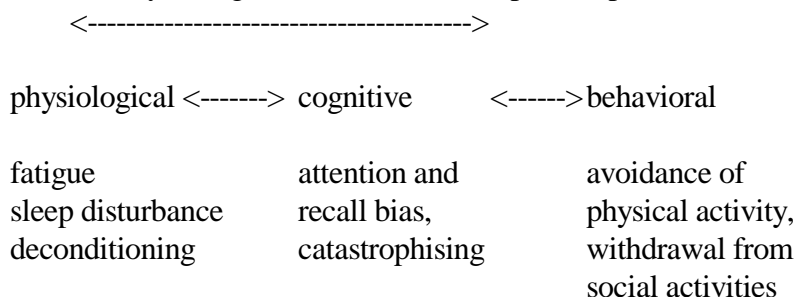
4.2 Depression

Depression is a label that is applied to a simple transient dysphoric mood with no accompanying symptoms, to a syndrome (a set of symptoms), or a clinical disorder (e.g. the DSM-IV category of major depression). Clinical depression has been subclassified by distinguishing between bipolar and unipolar depressions, and between reactive/neurotic and psychotic depressions. Since the emphasis in this chapter is on psychosocial and not on biological factors, we will restrict ourselves to one subtype of unipolar and nonpsychotic depression, namely major depression. For

patients to receive the clinical diagnosis of major depression, it is necessary that apart from depressed mood or loss of interest at least four of the following symptoms have been present during a two week period: weight loss, fatigue, insomnia/hypersomnia, (somatic component), feelings of worthlessness or guilt, inability to concentrate or indecisiveness, recurrent thoughts of death and suicidal ideation (cognitive component), psychomotor agitation or retardations, loss of interest in activities (behavioral component). Behavioral symptoms such as decreased levels of activity and social withdrawal are seen as secondary symptoms linked to the dysphoric mood state. The cognitive component of depression first of all consists of a negative bias in the selection and recall of information, and secondly, a stream of more or less automatic thoughts which reflect the patient's negative view of him or herself, the world and the future. A characteristic thought pattern in patients with clinical depression is catastrophizing, an extreme form of worrying that manifests itself as a tendency to define increasingly worse and worse outcomes to past, current or future problems. It is likely to lead to the rejection of potential solutions because they may be also perceived as having problematic features (Davey, 1994).

In patients with clinical depression the physiological, cognitive and behavioral components of depression form the intricate parts of various loops. Some of these are: (a) dysphoric mood may lead to reduced activity and vice versa, (b) reduced activities may lead to deconditioning of psychological and physical competencies as well as to loss of positive reinforcements, while mainly aversive experiences may be left over, (c) negative life experiences are processed in a way that minimizes positive aspects and maximizes negative ones, and (d) maladaptive beliefs and automatic negative thoughts induce dysphoric mood (see Table 2).

Table 2. Psychological factors in maladaptive depression: a vicious circle model



Clinical depression does not occur in a social vacuum. In their landmark study with respect to the protective, risk and symptom-formation role of social factors in depression in women, Brown and Harris (1978, p. 270) note "depression is fundamentally related to social values since it arises in a context of hopelessness consequent upon the loss of important sources of reward or social value. A woman's own social milieu and the broader social structure are critical because they influence the way in which she thinks about the world and thus the extent of this hopelessness; they determine what is valued, as well as what is lost and how often, and what resources she has to face the loss".

4.3 Somatoform disorders

Somatization is the tendency to experience and report negative emotions predominantly in the form of physical symptoms and to seek medical help. This tendency becomes a clinical problem and is classified as a somatoform disorder (DSM-IV) when an individual frequently attributes his or her bodily sensations to physical illness and persists in a medical diagnosis and medical treatment. Because of the lack of a medical cause patients with somatoform disorders are often an

enigma to the medical profession. The patients unanswered requests are the source of many tense and ambivalent patient-doctor relationships and doctor shopping. When asked, patients will often deny other conditions for feeling anxious or depressed than physical suffering and disability. In DSM-IV somatoform disorders are categorized by means of recurring multiple somatic complaints (somatization disorder), by the presence of symptoms that suggest a neurological or other general medical condition (conversion disorder), by severe and interfering pain (pain disorder), and by the fear and preoccupation of having a serious disease that is based on the misinterpretation of one or more bodily sensations (hypochondriasis). The physiological, cognitive and behavioral components of somatoform disorders overlap with those of anxiety and mood disorders. In addition, similar mechanisms are observed in these patients as in clinical anxious and depressed patients. Generally speaking, patients may demonstrate one or more of elements in the anxiety/depression loop: they are very attentive to and afraid of bodily symptoms, worrying and catastrophising prevails their thought patterns, they avoid physical effort and other symptoms evoking situations with deconditioning as a consequence, and they hold firm illness cognitions (also see Tables 1 and 2).

5. From illness to emotion

Symptoms and mechanisms involved in anxiety and depression as a state, syndrome and clinical disorder that are observed in patients with a physical disease may be interpreted as a reaction to their current illness or as an expression of their premorbid functioning. In comparison with the general population somewhat elevated rates of prevalence of clinical anxiety and depression are found in medical patients. The onset and maintenance of anxiety and depression and its relationship with mental and physical disorders is thought to be multidirectional and complex in nature. Multiple determination is the rule rather than the exception in physical and/or mental

disorders, that is to say biological, psychological and social factors may contribute independently and in interaction. Notwithstanding the aforementioned complexity, there is some consistency in the psychological mechanisms involved in the expression of anxiety and depression in patients with various physical disorders. To illustrate this consistency in psychological mechanisms, a description will be given of coronary heart disease, of the chronic and progressive disease of rheumatoid arthritis and the life-threatening disease of cancer.

5.1 Coronary heart disease

A cardiac event, such as a heart attack, has a strong emotional impact. Most patients have to come to terms with the threat of a potential new attack, in addition to making important adjustments to their lifestyle (quit smoking, dietary restrictions, regular exercise, cutting down on work or altering working style, avoiding stressful events). Anxiety and depressive feelings are quite normal in the first days or weeks, but persistent negative emotions may seriously interfere with adapting to the new situation. For example, anxiety may induce hypervigilance to every minor cardiac sensation, which may further raise stress and anxiety and affect cardiac functioning. Eventually, avoidance behavior towards exercising or other physical activities may impair effective rehabilitation. Conversely, a denial of the disease also occurs which may cause a person to not respond properly to specific symptoms. It is known that delay behavior to seek medical help to the doctor and/or take medication has an important impact on the mortality rates, following a heart attack. In both cases, patients need to learn how to identify serious cardiac symptoms and differentiate them from other physical sensations.

Feelings of helplessness and depression may undermine the energy and competence to make the required lifestyle changes and to engage in problem solving, required to make social and work adjustments. In addition, recent research has shown that distressed cardiac patients with a strong tendency to suppress negative emotions have a four times increase of the probability of another cardiac event within the next 6 to 10 years after the first (Denollet, Sys, Stroobant, Rombouts, Gillebert, & Brutsaert, 1996). Overall, persistent anxiety and depression are signs that the patient has not adapted well to the illness, which may interfere with the physical, psychological and social aspects of the recovery process.

5.2 Rheumatoid arthritis

Rheumatoid arthritis (RA) is a disease with a chronic and unpredictable course, occurring in about 1 percent of the population. The main feature of RA is inflammation of the joints, resulting in joint damage and invalidity. Characteristic symptoms are physical disability, pain, fatigue, depression, anxiety and social isolation. The presence of clinical anxiety and depression in patients with RA (and in many other medical diseases) is in epidemiologic studies generally overestimated due to overlapping somatic symptoms. Notwithstanding these general classification problems, elevated levels of anxiety and depression occur more frequently in patients with RA than in matched samples of the population. It has been demonstrated that anxiety and depression are highly related to interference with and the loss of highly valued activities. Anxiety and depression in patients with a chronic disease such as RA may be conceptualized using different models that are not mutually exclusive (also see Teasdale, 1985). The first model hypothesizes that negative emotions may result from a sustained reduction in physical and social activities and a concomitant decline in important social rewards. Functional limitations and pain may force

patients to limit their daily activities. By restricting the range of activities, the patient reduces access to sources of reinforcement and becomes entrapped in a cycle of depressive behavior. The second model assumes that pain and interference with daily activities function as uncontrollable stressors which give rise to a state of helplessness and depression. Vulnerability is high in patients who have acquired the habit of blaming negative events to themselves and believe that the causes are permanent.

Depression in patients with rheumatoid arthritis can be the consequence as well as the antecedent of pain. It is plausible that high levels of pain foster the use of catastrophizing and produce depression, as well as the converse. For instance, it seems likely that a lowered mood will increase the expectations of the sufferer that the pain will increase or follow after activity. Lowered mood also increases the accessibility of memories of past aversive experiences. In a longitudinal study Ward (1994) found that about 6 % of changes in a patient's ratings of pain was due to a change in their level of depression.

5.3 Cancer

In patients being diagnosed with a life-threatening illness as cancer, anxiety and depression are 'normal' reactions given the threatening nature of the disease, the invasive medical procedures used to diagnose it, and the detrimental side effects of treatment. Anxiety and depression are adaptive in function when they motivate one to do something about the situation, such as constructive actions (adherence to treatment, readiness to change habits, accept imperfections, openness to others) and to enjoy life as much as possible (remain physically and socially active, set and reformulate goals).

A source of anxiety is the patient's fear of dying and confusion about the meaning and order of life. In addition, many patients experience stressful complications of medical treatments,

such as pain, fatigue and weakness. Next, diagnosis and treatment tax the patient's resources, are time consuming and disruptive and at the expense of rewarding activities such as social and recreational activities. Last, bodily changes as a result of treatment may evoke fear of rejection, for instance many women who underwent breast surgery fear being rejected by their husband.

Depression is maladaptive and may reach a clinical level when it results in somatic symptoms of fatigue and loss of appetite, thoughts about helplessness, worthlessness and suicide, social withdrawal and immobility. Clinical depression expressed itself in one patient with terminal lung cancer in the following ways: After having heard his 'death sentence', a successful and socially active lawyer quit his job, went home and withdraw himself to bed and waited to die. When not asleep his thoughts centered around guilt (his smoking and the lung cancer), self-pity (why me?), helplessness (everything is lost, there is nothing more that can be done), and catastrophe (death will be soon and painful). The patient's thoughts and actions were inadvertently reinforced by his wife and children who spent their evenings in his bedroom discussing the current catastrophe and pitying him.

6. Some considerations for the management of anxiety and depression in patients with physical disease.

Medical patients have in common that they are apprehensive about their health. The negative emotions that are generated by somatic symptoms and their appraisal stimulate patients to undertake a variety of actions and eventually towards help-seeking behavior. In addition, negative emotions are a motivating force for many patients to adhere to medical treatment and adapt to a life style that contributes to or restores health. One might say that negative emotions are essentially adaptive in that they motivate people to cope with perceived illness threat or loss. The mere absence or an extreme level of negative emotion might be a source of dysregulation in pa-

tients with physical disease. An assessment of the patient's context and meaning of negative emotions is a prerequisite, if the physician is able to care for the patient's well-being. Apart from the components of negative emotion, various other circumstantial factors have to be considered such as the nature and duration of the threat or loss, the patient's physical and mental condition, his or her coping skills and resources, social support, financial-economic situation and so on.

In case of anxiety or depression, an exploration and understanding of the maladaptive aspects may guide the physician's actions. Of special concern are the following aspects: hypervigilance to bodily sensations, worrying and/or catastrophising, avoidance of threat stimuli, and withdrawal from social and physical activities. Hypervigilance may be the result of the patient's attempts to control (escape or avoid) his or her bodily sensations. On the one hand, focusing on and acting to avoid pain reduces the likelihood of increases in pain on the short term. On the other hand, the avoidance shown for instance by persons with chronic pain or fatigue impedes correction of exaggerated pain expectancies associated with certain activities. This may actually induce and maintain a kind of kinesiophobia. Important deconditioning of the patient and increasing vulnerability to further injuries and painful events may be the result. Prescription of restricted activity (not working, resting) may inadvertently contribute to kinesiophobia and to more preoccupation with illness symptoms in general. Attention to bodily symptoms such as pain, fatigue and itch exacerbate the intensity of the symptoms, causing patients to engage in fewer productive and satisfying activities, and to receive less stimulation for adaptive behavior by their environment. Current psychological interventions therefore emphasize the education of patients to recognize, restructure and act upon the whole of cognitions, emotion and behavior. Narrow approaches are detrimental to both accurate diagnosis and efficient treatment. For example, a diagnostic pitfall is not noticing the 'nonexpression' of emotions manifest in some patients with maladaptive depression. When they are not asked explicitly, these patients will mask

their condition and impede adequate intervention. Because depressive mood contributes to inactivity, deconditioning and disability, and it acts as an adherence barrier, it is easy to understand how a vicious loop may worsen the patient's condition in the long run. Another pitfall is overlooking that anxiety and depression syndromes may be associated with a serious medical disease (i.e. hypoglycemia, carcinoid syndrome, brain tumors, Cushing's syndrome, hypothyroidism, and so on). It is because of this association that a thorough medical workup with physical examination and laboratory tests are a must in diagnosing patients with these syndromes.

In general, there are number of ways in which a physician can help to manage negative emotions in patients.

First, there is widespread agreement that a supportive, trusting and understanding doctor-patient relationship may serve as a buffer against excessive anxiety for the patient as he or she attempts to cope with the symptoms and consequences of illness. By providing the patient with an opportunity to share life problems and the sequels of illness, the physician may alleviate the sense of hopelessness and help the patient to cope with his or her problems.

Second, important aspects of the doctor-patient relationship are explanation and clarification. Feelings of anxiety and helplessness may be induced by the invasive nature of some medical treatments. Significant reductions in distress can be achieved by increasing the patient's ability to understand and interpret their experiences through medical interventions. Being told when and which kind of sensations are to be expected may enhance their sense of control. It is also a well-established fact from psychotherapy that providing a theory of what is wrong and a set of steps to take to overcome what is wrong may often reduce worrying and relieve negative emotions. For this purpose clinicians need to assess their patients' explanatory models of their illness, that is the appraisal, ideas and concepts about the illness and its management. Only then is the physician in the position to share his understanding of the illness with the patient and to clarify existing discre-

pancies in their respective models. Especially the early stage after diagnosis of a chronic disease represents a time in which patients experience significant emotional distress. Worrying about and catastrophic appraisals of the symptoms of the illness may have detrimental effects on the patient's emotional adjustment to it. Helpful interventions at this stage are the sharing and if necessary correction of the illness models that patients hold. In addition, necessary information may be provided by means of written information and patient-education activities.

Third, the patient's understanding of the disease processes will generally improve treatment adherence, promote an efficient coping with the disease, and raise self-efficacy. For example, exercise may both help to control rheumatoid arthritis and improve the patient's sense of control. In the event of high levels of pain, various pain management strategies (e.g. medication, physical therapy) may be applied to reduce the patient's distress. Optimal care can be given by instructing and training patients to manage their pain by themselves as much as possible. The general picture is that the things patients can do for themselves lead to less anxiety and depression and to greater health and satisfaction than if the same things are provided for them. A crucial strategy in dealing with patients with a chronic disease is to teach them to focus on objective and short-term goals with realistic demands. However, there are two caveats. One is that a fixation on tolerating pain misses the point that patients have also to engage in other life tasks; learning to live with pain implies having something else to live for. Another is that the patient should not focus on trying to control the disease process itself, because these efforts may enhance their sense of helplessness and depression. In contrast with this, they may achieve a sense of mastery and control by their management of the impact of the disease on daily life activities.

Fourth, patients who gained a level of mastery and continue some daily life activities are more likely to maintain their social support network. Feeling supported by and being embedded

in a network of social relationships protects against negative emotions, such as anxiety and depression. In addition, a supportive social network is associated with many benefits at a physical level. For example, it reduces the likelihood to die from serious illnesses, it lowers the risk of medical complications in many diseases, it induces less needs for medication and it speeds up recovery. The physician can have an important role in promoting interaction with the members of the patient's social support network, especially during hospitalization or during illnesses impeding the maintenance of social activities, such as working.

An example of one-sided treatment with potential iatrogenic effects is the prescription of antianxiety medications or antidepressants while overlooking the psychosocial origins of negative emotions. This may reinforce the layperson's false premise that negative emotions are bad for one's health. An additional iatrogenic effect might be that in reducing the patient's level of negative emotion, one may also achieve a decrease in the patient's adaptive action tendencies to cope with threat or loss. Although the initial buffering of extreme distress by medication may be useful, in the long run it is better to stimulate patients to recognize, express and act upon negative emotions. The same is true for the patients' blunting of feelings in the initial phase of an acute crisis. Initial repression may help patients to adjust to the crisis, whereas later repression prevents adjustment. Negative emotions are multiple-determined and arise in complex situations. Simple pharmacological solutions to complex and multicomponent behaviors are not to be expected.

This introductory chapter may guide the physician in his or her understanding of moderate levels of anxiety and depression in their patients. A review of the mechanisms and the treatment of clinical anxiety and depression is beyond the scope of this text. A comprehensive text on anxiety or depression disorders has at least the size of a handbook and deals with biological events and psychological processes (also see Barlow, 1993; Rachman, 1998; Wolman & Stricker, 1990).

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