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Dimensions of Health and Disease: Biological, Psychological and Social

V. Zikmund

Department of Brain Physiology, Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Bratislava, Slovakia

Abstract

Health and disease in a human being can be defined from various points of view: as a certain state, manner of functioning of an individual and his organism, a certain capacity of life's manifestations and the potential of maintaining them in the future. In this work the functional aspect of health and disease is considered to be the most significant. Health is defined as a functional optimum of all of life's processes and manifestations of man and its basic signs, biological, psychological and social are discussed. As regards the maintenance and promotion of health the importance is emphasized of a man's ability to cope with stressful life situations and of the support in a social environment. The functional aspects of health and disease in respect to the quality of life are also discussed.

Zusammenfassung

Gesundheit und Krankheit beim Menschen können unter verschiedenen Gesichtspunkten definiert werden: als ein bestimmter Zustand, als Funktionsweise eines Individuums und seines Organismus, als eine bestimmte Kapazität von Lebensmöglichkeiten und als Potential, diese auch in Zukunft aufrecht zu erhalten. In dieser Arbeit wird der funktionale Aspekt von Gesundheit und Krankheit als der bedeutendste betrachtet. Gesundheit wird als funktionales Optimum aller Lebensprozesse und Lebensmanifestationen eines Menschen definiert, und die basalen biologischen, psychologischen und sozialen Anzeichen hierfür werden diskutiert. Als besonders

Correspondence to: Prof. Vladislav Zikmund, MD, D.Sc., Department of Brain Physiology, Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Sienkiewiczova 1, 81371 Bratislava, Slovakia

Invited paper

wichtiger Gesichtspunkt für die Aufrechterhaltung und Förderung von Gesundheit wird die Fähigkeit eines Menschen betrachtet, mit den Streßsituationen des Lebens umzugehen und sich soziale Unterstützung zu sichern. Die funktionalen Aspekte von Gesundheit und Krankheit im Hinblick auf die Lebensqualität werden auch diskutiert.

Introduction

Taken from the broadest point of view, health and disease represent two fundamental, qualitatively different manifestations of life and ways of existence of living organisms. Health is characterized by such course of life's processes which ensures its maintenance, extension, and optimal functioning of an organism as well as its optimal interaction with the environment. A disease disturbs and damages life's processes and functions and interferes with the organism's ability to interact with its environment. To various degrees it endangers life but, at the same time, it also manifests itself by the processes focused on recovery of health. The progression of the disease and the decrease of the ability of an organism to renew health condition results in death.

According to Engel's biopsychosocial model of medicine, health and disease of man can fully be understood only in terms of their biological, psychological and social parameters (Engel 1977). Various positive and negative factors of the human organism, environment and life style, working together or against each other, take part in the creation and development of health and diseases which makes it necessary to consider health and diseases from a broader, ecological point of view.

Health Concepts and Definitions

As opposed to the concurrence of the opinions in the matter of the number of relatively well described and clearly defined diseases, disorders and other damages of health, there is no unanimous position on the subject of the basic characteristics of health itself and on the definition which would include all of its basic elements and manifestations. It is certainly not enough to describe health as a condition without a detectable disorder or disease; but it is its only aspect which can be relatively easily demonstrated and against which there can be no serious objections.

World Health Organization has defined health as:

- "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO 1948),
- "a condition or quality of the human organism expressing the adequate functioning of the organism in given conditions, genetic or environmental" (WHO 1957),
- "a state of complete physical and mental well-being which results when disease-free people live in harmony with their environment and with one another" (WHO 1986).

These definitions or characteristics of health do include all three dimensions of life manifestations of man – biological, psychological and social – however, they have several shortcomings. For example, they can hardly be used for determining the state of disease, for evaluation of treatment results, for prevention or health research.

The definitions omit the way in which various life's processes and functions take place in the human organism and focus only on the final result and/or manifestation of these processes and functions as they reflect themselves in the subjective experience. They describe the state of an overall life contentedness, when a man feels good and is well off and when his needs, demands and expectations are satisfied, not only from the health, but material and social point of view as well. All these are signs included under the definition of quality of life.

The state of well-being and happiness can be experienced by a man with health disorders and vice versa; a physically and mentally healthy man can suffer various degrees of physical and mental discomfort and hardship. A person who suffers from hunger, bad weather, worries about his own existence or the future of others or who griefs for someone who was close to him does not have to stop being healthy. Too much effort spent trying to "to get rid of discomfort" and particularly "feel well and be well off" often contributes to the fact that to reach the above mentioned goals a person uses such means which are inconsistent with maintaining his health.

Finally, the above definition does not take into account the fact that a certain degree of discomfort is not only a natural part of life but is one of important preconditions for maintenance and promotion of health. Without various demands, burdens and stresses connected with various degrees of discomfort, many positive characteristics of a man not only could not develop, but prowess, resistance and adaptability of his physiological and psychological functions could not improve which are the basic preconditions and expressions of health. In terms of health, the question of demands and burdens and the ill-being connected with them is then a question of their origin, type, intensity and amount, their time frame and how gradual they are as well as man's ability to cope with them, which again is dependent on the resources one can receive from the social environment. The state of complete well-being should appear to be a certain goal of a man and the society while health can and should only be one of the means of reaching this or any other positive goal.

What is health, then? Health can be viewed as a particular state, a way of functioning, a certain capacity of life's manifestations or a source of existence (Currer 1989). The state of health includes, above all, a certain degree of the ability of a man and his organism to maintain harmony and equilibrium among life's manifestations in the organism itself as well as in the relationship to the environment. Thus, the basic characteristics of health include such course and way of functioning of all life's manifestations that would not only help maintain but promote a man's existence, biologically, psychologically as well as socially. This necessitates, for one thing, a certain capacity or extent of all three categories of life manifestations in man, for another a certain degree of their efficiency and resistance and yet another a certain potential for their continuation into the future.

The term healthy cannot be used to describe only certain immediate diagnosis of the level of life's manifestations and functioning of man and his organism but it has to take into consideration the degree to which these expressions are in danger due to a risk of an occurrence and development of disease.

Health is one of the basic resources and preconditions for an optimal functioning of a human being and his organism. It can be said that the fundamentals of health are this certain optimum of all life's manifestations in a man and his organism, biological, psychological and social. This optimum is dependent on many internal and external preconditions and it can change markedly during the course of life. Its manifestations are quite different in the early childhood, in the adult age and in old people; they can change with respect to dominant activities in a man's life also. One of the basic signs of health is a certain degree of resistance against its damage, the ability to limit this damage and renew the functional optimum from a man's own internal resources and the resources of his organism (Zikmund 1983, 1992).

Generally, in this definition, health as a functional optimum is understood to be such a course of life's manifestations in which all positive biological, psychological and social characteristics and abilities of a man and his organism are applied and developed in the best and most lasting manner, their resistance against the damage is strengthened and their life span is extended (Zikmund 1992). According to several authors, positive expressions of health can be divided into several groups which together form a whole. For example, Ware (1987), in terms of health discusses its completeness, expressiveness and five different dimensions: physical, psychological, integration into social relationships, fulfillment of social tasks and an overall feeling of well-being.

Basically, the way life's processes take place in a human organism, psychological processes and the interaction of a man with his environment are all indicators of health. When evaluating these processes certain norms and/or standards and their limits are used in the area of various biological, psychological and social manifestations of life in a man and his organism. These norms are considered to be a sign of maintaining health and are used to determine its disorders. Much less attention has been paid to the searching for certain optimum of manifestations of life in a man and his organism and to the determination of the limits of this optimum, even though only these indicators can contribute to the improvement and promotion of health.

Physiological Manifestations of Health

The relationship between physiology and health lies mainly in the fact that physiology focuses on the organization, regulation, coordination and integration of the processes and functions in a living organism and its components, on the mechanisms of maintaining of certain equilibrium or homeostasis of the stated processes and functions inside an organism with respect to the environment as well as on the ability to adapt and interact with the environment. The term health applies mainly to the result of the overall functioning of an organism and its external manifestations.

To determine the state of health in terms of physiological functions, their measurable signs are used as is their effectiveness or load resistance. Recently, Gunderman (1990) discussed the relationship between health and "physical fitness" with a critical approach to a dominant or even obsessive focus on high performance in the area of certain physical functions which has recently become the main goal or sense of life for many people.

In the study of physiological regulations physiology is approaching ever more closely the biopsychosocial understanding of health by studying the effect of psychological and social factors on the reception, processing, storing and reviving information in the brain as well as the impact of the effects of the above stated factors on the physiological functions of the organism of higher animals and man. Thus, several interdisciplinary areas of physiological research have been established which can be included under the term medical psychophysiology such as psychoneuroendocrinology, psychoneuroimmunology, neurocardialogy and others (Zikmund 1988). The methods and concepts from the above given areas have become part of the approach to health and disease in psychosomatic as well as behavioral medicine.

Psychological Manifestations of Health

Unlike the somatic part of health, which is evaluated mainly on the basis of objective manifestations its psychological aspects also include subjective experience of one's own existence and various feelings which do not need to manifest themselves overtly in the behaviour and performance of a man. Much information and many opinions, contradicting each other to various degrees, exist on the question of what is to be included in the basic signs of mental health and on the subject of mutual relations between mental and somatic health.

Sartorius (1983), in a broader definition, points to three levels of mental health. 1. The absence of any clearly defined mental disorder. 2. A certain reserve of strength and resistance which would help a man to overcome unexpected burdens and extraordinary demands. 3. An equlibrium between man and his environment or other individuals, the coexistence between characteristics and the manifestations of life in an individual, others and the environment. The above mentioned levels, even if only generally, include three areas of expression and the sources of mental health. The first area comprehends mental health in its most basic, almost "passive form" which can include also the absence of disorders of subjective experience of one's own existence. The second area pertains to a certain prowess and resistance of an individual against burdens and the third touches upon social interaction, including social support.

As far as the subjective experience of one's own existence in relation to the overall health is concerned, Watson and Pennebaker (1989) point to the fact that a certain type of personality can be characterized by a rather general tendency to prefer negative or positive expressions in his/her emotional reactions. Individuals with the tendency to feel more intensively negative emotions experience significant feeling of ill-being, discontent and stress even in situations which do not objectively represent a more serious burden. Such people have the tendency

to focus mainly on the negative side of themselves, others as well as life and the world around them, often causing the feeling of discontent.

This tendency is also manifested in frequent experiencing of various subjective health difficulties which, however, contradict the objective indicators of health. People of this type tend to have a number of physical problems but in spite of significant subjective health disorders these people objectively do not show any more frequency of serious diseases nor an increase in mortality. The above mentioned authors also call these manifestations general characteristics of somato-psychological distress. This unique characteristic of subjective experiencing of one's own state of health is just as peculiar as its opposite, i.e. the prevalence of positive emotions contributing to the fact that people with many physical health problems experience subjective feeling of well-being and often feel happy, perform well and are full of optimism.

The data described above can initiate the following question: What kind of experiencing of one's own existence is actually a sign of mental health? Taylor and Brown (1988) mention that according to many prominent theoreticians in order to be mentally healthy one has to correctly perceive oneself, the world and the future. Contrary to the above, much research shows that normal human thinking reflects positive self-evaluation, exaggerated perception of one's control over various factors which can influence a man's life and a certain overestimation of one's own ability to manage various situations, i.e. unrealistic optimism. In addition, it appears that these illusions improve mental health including the ability to take care of others, feel happy, be ambitious and carry out productive and creative work. These characteristics may contribute to a certain overall resistance against various burdens and not only mental but somatic disorders and diseases as well. This resistance is typical for people with a markedly expressed feeling of self-assuredness, self-reliance and overall optimistic approach to various stressful life situations.

The various sides or manifestations of mental health may differ so significantly from manifestations of physical health that they can seem to be independent of each to a certain degree, as if there was a certain dichotomy between them. For example, Ware et al. (1984) show that the correlation between psychological distress and physical functioning is only 0.25 which they take as a proof that those two are independent dimensions. However, many other works consider mental health a part of the entire state of health (Kaplan and Anderson 1990). The way in which a man is capable of coping with life's burdens reflects a close mutual relationship between psychological factors and maintaining not only mental but somatic health as well.

Caplan (1981) defines stress as a situation in which there arises a significant discrepancy between the demands placed on a man and his organism and the man's ability to meet these demands which from a biological and social point of view endangers the relative level of his existence. In a complex way, stress can be caused not only by demands placed on a man but by the way he experiences them which in turn affects his mental as well as physiological functions. If a man possesses the ability to cope with even very great demands the resulting burden and/or stress is small and does not usually have any serious health consequences;

on the other hand if a man's ability to cope with stressful life situations is low, even small burdens can endanger and damage his health (Vogel 1985).

Lazarus and Launier (1978) differentiate between two main types of coping: the first one focuses on solving the problem of causing the stress, i.e. on a direct action, and the other one focuses on decreasing the emotional ill-being connected with the burden, i.e. on palliation. In case of the direct action a man tries to reduce or remove the cause of the burden or increase his resistance to it or, if there is no other way, adapt to it. In case of palliation the focus is on lessening or removing the subjective feeling of ill-being connected with stressful situation using, for example, psychoactive substances, relaxation methods or cognitivie defense mechanisms. Miller et al. (1985) were testing a large group of women for the relationship between eleven selected ways of reacting to stressful events and psychiatric disorders. Anger toward oneself or others, dwelling on the situation or abusing alcohol and nicotine were all signs clearly differentiating women who, during the first examination, showed signs of various psychiatric disorders from the ones that were mentally health. Maladaptive reactions seemed to often lead to illness, even in case of small burdering situation.

In our work, focused on the study of the relationship between the development of certain somatic diseases and the degree of the ability to cope with various, actually experienced stressful situations in the course of one's entire life, from early childhood up to the first clinical manifestations of the disease, we have found that there exists a certain relationship between these two indicators. People who were not able to manage various burdening situations in an effective, well-balanced and socially reasonable manner in the entire premorbid life, showing, instead, disturbing affective reactions, developed several of the diseases under study (namely progressive arthritis, bronchial asthma and coronary heart disease) in a markedly younger age than those who showed good ability to cope with stressful life situations (Zikmund 1975, 1977; Zikmund et al. 1982). In 1971 we examined a group of 50 patients with well documented myocardial infarction and checked them after 10 years. The most striking difference between the subgroup of subjects alive and dead was in the premorbid ability to cope with difficult life situations. A markedly higher rate of failures and a markedly lower rate of an ability to cope with the above situations in an adequate way was found in the subgroup of subjects who died. No significant differences were observed in any of the other factors under study (Zikmund et al. 1983).

In another study of the ability to cope with stressful life situations in coronary heart diseased patients, differences were analyzed between subgroup with the first manifestations of the disease in a younger as compared to an older age. A significantly higher proportion of the disturbing predominance of strong emotional reactions and a significantly lower proportion of the purposeful and socially adequate reactions were found in the behaviour of the younger group when coping with affectogenic situations compared to the older group during the whole premorbid life. In the childhood, adolescence, and in the later private life, the younger group showed a significantly higher proportion of the uncontrolled affects than the older group. In both groups, however, the lowest ability to cope with stressful situations in a well-balanced and socially reasonable manner

was found in the family life. There was a markedly higher number of conflicts with brothers and sisters and with fellows during the childhood in the younger group than in the older one. The younger group reported markedly higher numbers of conflicts and other affectogenic situations than the older one during the adolescence and the military service and its members changed their jobs more than twice as frequently before the first manifestations of the disease. More than 2,000 concrete data were evaluated on the whole in 190 men (Zikmund 1993).

The relationships between psychological and social factors and somatic health have become the subject of studies in the extensive area of health psychology which has been defined as a knowledge base of psychology applied in the understanding of health and disease (Matarazzo 1984; Holtzman et al. 1987; Rodin and Salovey 1989). The concepts like the so called "hardy personality" (Kobasa 1979) which has been used by other authors with respect to resistance to disease (Howard et al. 1986) as well as the concept of "self-efficacy" (Bandura 1991) are especially initiating, from the psychological and psychophysiological point of view.

Social Manifestations of Health

From several points of view social aspects and manifestations form the most complex, unique side of health as a functional optimum. Complex relationships between health from the somatic, psychological and social aspects are reflected in the concepts of quality of life which are utilized also with respect to the manifestations and consequences of diseases and the results of their treatment. These concepts reflect the definition of health as the extent to which a man is capable to meet his aspirations and satisfy his needs, on the one hand, and change his environment or manage it or come to terms with it, on the other. Thus, they are based on an ecological model of health.

More recently, Shumaker et al. (1990) define the quality of life as an overall contentedness with life and a general feeling of personal well-being. To evaluate the quality of life they suggest six dimensions. The first four, as usual, are connected with the quality of cognitive, social, physical and emotional functioning of an individual; the fifth dimension – personal productivity – relates to the degree to which an individual is able to benefit the society, that is, the occupation or other activities beneficial to the society. The sixth dimension is intimacy which includes sexual functioning as an expression and reception of a broad range of behaviour, forming the base for the feeling of intimate connection to others.

So far, no unanimous opinions exist on the subject of the definition of quality of life or a way to evaluate it nor is there any unity on what the fundamentals of quality of life are and which factors merely influence ist. The latter pertains to an important health factor such as social support or the support of the social environment.

Kiritz and Moos (1974) conceptualized the influence of social environment, which have a significant positive or negative impact on human health from a psychological as well as somatic point of view, into three basic dimensions: the relationship dimension which includes the degree of support given to an individ-

ual by his social environment from a biological, psychological and social aspect, his proximity to other members of social environment and his participation in reaching common goals; the dimension of personal development and finally the dimension of a certain functional system of social environment and the changes taking place – this dimension includes a degree of order, clarity and control as well as organization which takes place in a particular environment.

The first of the above mentioned dimensions is closely connected to the concept of social support. Several components are contained in the manner in which social relationships and bonds of an individual influence his health. A number of them pertain to the overall arrangement in life (living alone, with a family, the frequency of social contacts, participation in social activities and participation in the network of social relationships) and others deal with the role which social environment plays in the life of an individual (expressing positive emotional bonds, emotional support, encouragement, help with looking for solutions to various problems and help with the actual solving of these problems, supplying necessary information, material help, etc.) (Wortman 1984).

Cohen and Wills (1985) dealt with the question whether positive relationship between social support and mental and somatic health as well as the overall well-being can be attributed more to the general beneficial effect of social support (a model of the direct effect) or to the support or assistance which this social environment gives to an individual in distress (a model of the buffer); the authors conclude that both models are justified.

Many retrospective and prospective studies show rather unanimously that people with low quality and quantity of social interaction manifest an increase of various diseases and mortality. Social support gives an individual emotional, informational and material resources in order to lessen the stress causing effect of life's stresses and it increases his motivation to maintain health and life. Socio-biological theories on the effect of social relationships on health state that, from early development of animals, these relationships and social interaction contribute to the processes of homeostasis in the organism and they have not only the emotional and motivational effects but also the neuroendocrinological ones, which influence the processes of immunity and of the overall organism's resistance to damage. In a particular individual, this effect, to a certain degree, seems to be independent of his basic coping and adapting abilities as well as the cognitive processing of social relationships (House et al. 1988).

Manifestations of Diseases

Like health, diseases have not only a biopsychosocial base but biological, psychological and social manifestations as well: disorders of physiological processes and functions and structural changes in cells, tissues and organs, subjective experiencing of these disorders and changes – as far as they are reflected in the consciousness – and the effect of the above manifestations of diseases on individual's social functioning. All these aspects do not have to fully harmonize, there can be relatively large discrepancies among them.

Disease as a pathological change of various structures and functions of an organism can cause a varied degree of illness, subjective difficulties, suffering and a decrease in performance and vice versa, a certain degree of subjective experiencing of somatic and mental distress can have a very differently serious pathological substrate in the organism. The spectrum health – illness, or the experiencing of disease is continuous as opposed to the spectrum health – disease, or the presence of pathological changes in an organism which is discontinuous, i.e. a man and his organism either are or are not diseased (Jennings 1986).

Susser (1990) discusses several basic differences between disease as a term for objective somatic or mental disorders on an organic level relating to an individual organism; illness as a subjective state and awareness of a dysfunction on a personal level which is also limited to an individual; sickness which relates to a state of social dysfunction as well as a certain social task, with varied specifications, according to what the individual thinks the society or the social environment expect of him. These three levels of health disorders, which are more of a dynamic, processlike character, either worsening or improving the health situation can, in an unfavorable case, lead into stable and persisting disorder which the WHO has defined as impairment – when the disorder refers to the physiological or structural level of the organism, disability – when the disorder refers to physical or mental dysfunction at the personal level, and handicap – when the disorder refers to persisting social dysfunction of the impaired or disabled individual (WHO 1980).

All three of these aspects are also reflected in the concept of quality of life in relation to health or in relation to the manifestations and consequences of diseases as well as the treatment results. Schipper et al. (1990) define quality of life of an ill person from the point of the awareness of one's own state and performance in four areas: physical and work, psychological, social interaction and physical sensations. Under this definition an ill individual serves as his own control. The authors suggest an arrangement of areas, included under the definition of quality of life, into concentric circles: the somatic parameters of the disease, personal functioning, degree of psychological distress, general awareness of health and functioning within social tasks. As regards the treatment results quality of life can be defined as a certain space or a difference between the expectations of the ill person as concerns the treatment results and that what was actually achieved.

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