

A clinical model I: Health.

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Abstract

Background

Medical knowledge is an immense pile of grossly unrelated facts. This study groups equivalent facts about different organs and environmental agents into a simple and clear clinical model (CM). CM aims to reorganize the concept of health.

Results

CM views persons as dynamic systems embedded in a local environment. The time of conception forms a border between each individual and its parents. After that and until death, a spatial border discriminates the individual from its actual environment. Data, nutrients, gases and waste products pass the spatial border through highly specialized structures and functions. For example, two-way communication between the environment and the mind relies on the senses and voluntary motor system. CM sets individuals apart from the environment by a border in time and space.

CM partitions a class called the general organ into parenchyma, tubes, slits/cavities, and connective tissue. Each of these four parts has equivalent morphology and functions in different organ objects. The equivalences facilitate overview and understanding of individual body parts. Organ objects are arranged in regions, segments and organ systems. All organ objects can consist of several tissues. Each organ object exposes some of its structures and functions to other organ objects. Interactions naturally organize in a limited number of links that account for intercellular metabolism, regulators, hemostasis, immune reactions, and somatopsychic- and psychosomatic reactions.

Conclusions

In this study, CM is a bio-psycho-social model of health. CM is a novel, versatile, systematic and scalable foundation for understanding disease.

Background

A major stumbling block for clinical work is the lack of a suitable clinical model (CM) that discriminates health from disorder. According to the World Health Organization's definition 'Health is a state of complete physical, mental and social well-being and not

merely the absence of disease or infirmity.’ (WHO 2017). Huber and coworkers propose the formulation of health as the ability to adapt and to self-manage (Huber 2011). These definitions tell nothing about central clinical concepts such as disordered organ function, etiology and pathogenesis, which are required for precision medicine (Collins 2015). Also, they do not discriminate favorable from harmful environmental agents. Therefore, WHO’s and Huber’s health definitions are difficult to use in clinical practice.

According to Canguilhem well-being is not felt (Canguilhem 2015:234). Rather, health is a multidimensional construct (CDC 2000). The variables include life expectancy, physiologic functions, emotional and cognitive functions, and perceptions about present and future health. In this study, health means the absence of symptoms and signs, and laboratory findings within the reference range.

The term model means different things in different sciences (Black 1962, Rumbaugh 1991, Clarke 2001, Bailer-Jones 2002, Diaconescu 2008, Chang 2012). A model is an abstraction of something for the purpose of understanding it (Rumbaugh 1991). A model may also contain a set of initial conditions that can be replaced during the development of a research program (Lakatos 1992). Here, the word model emphasizes global structures, properties, functions and relations between objects.

Systems consist of components that interact and are often organized in a hierarchy of subsystems (Klir 1985, Laszlo 2002, Weinberg 2001, Fridman 2004, Ravasz 2002) called life’s complexity hierarchy (Oltvai 2002). Systems mount a well-defined border but are open to their environment (Watkins 2008). The behavior of systems is irreducible to their component parts and often display emergent functions (Cohen 1986, Johnson 2001, Deco 2008, Riddoch 2010). Systems biology mostly concerns cells and cell organelles (ISB 2017). CM embraces all these levels.

The biological and the psychosocial domains are governed by different types of “laws” (Popper 2011). The biological domain is ruled by immutable physical universal laws that can be used in technologies such as in the treatment of disease. Normative “laws” on the other hand, vary in space-time and are modified by human will. Psychosocial and sociopsychic acts and their consequences operate within the normative domain. Biopsychosocial models vary considerably in structure and content (Botelho 1996, Engel 1977, Engel 1980, Goldberg 1992, Wulff 1993). Some hold that biopsychosocial disease models is nothing more than a linguistic construction (Kirkengen 2002).

CM reorganizes and extends earlier biopsychosocial models and supplies a foundation for clinical decision-making. This study describes a CM of health. It models individuals that are well adapted to their physical and social environment and have an average life expectancy. Subsequent studies extend CM to disease and show that CM is founded on a consistent formal theory.

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