ANALYSIS

How should we define health?

The WHO definition of health as complete wellbeing is no longer fit for purpose given the rise of chronic disease. **Machteld Huber and colleagues** propose changing the emphasis towards the ability to adapt and self manage in the face of social, physical, and emotional challenges

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The current WHO definition of health, formulated in 1948, describes health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[1] At that time this formulation was groundbreaking because of its breadth and ambition. It overcame the negative definition of health as absence of disease and included the physical, mental, and social domains. Although the definition has been criticised over the past 60 years, it has never been adapted. Criticism is now intensifying,[2-5] and as populations age and the pattern of illnesses changes the definition may even be counterproductive. The paper summarises the limitations of the WHO definition and describes the proposals for making it more useful that were developed at a conference of international health experts held in the Netherlands.[6]

Limitations of WHO definition

Most criticism of the WHO definition concerns the absoluteness of the word "complete" in relation to wellbeing. The first problem is that it unintentionally contributes to the medicalisation of society. The requirement for complete health "would leave most of us unhealthy most of the time."[4] It therefore supports the tendencies of the medical technology and drug industries, in association with professional organisations, to redefine diseases, expanding the scope of the healthcare system. New screening technologies detect abnormalities at levels that might never cause illness and pharmaceutical companies produce drugs for "conditions" not previously defined as health problems. Thresholds for intervention tend to be lowered—for example, with blood pressure, lipids, and sugar. The persistent emphasis on complete physical wellbeing could lead to large groups of people becoming eligible for screening or for expensive interventions even when only one person might benefit, and it might result in higher levels of medical dependency and risk.

The second problem is that since 1948 the demography of populations and the nature of disease have changed considerably. In 1948 acute diseases presented the main burden of illness and chronic diseases led to early death. In that context WHO articulated a helpful ambition. Disease patterns have changed, with public health measures such as improved nutrition, hygiene, and sanitation and more powerful healthcare interventions. The number of people living with chronic diseases for decades is increasing worldwide; even in the slums of India the mortality pattern is increasingly burdened by chronic diseases.[7]

Ageing with chronic illnesses has become the norm, and chronic diseases account for most of the expenditures of the healthcare system, putting pressure on its sustainability. In this context the

WHO definition becomes counterproductive as it declares people with chronic diseases and disabilities definitively ill. It minimises the role of the human capacity to cope autonomously with life's ever changing physical, emotional, and social challenges and to function with fulfilment and a feeling of wellbeing with a chronic disease or disability.

The third problem is the operationalisation of the definition. WHO has developed several systems to classify diseases and describe aspects of health, disability, functioning, and quality of life. Yet because of the reference to a complete state, the definition remains "impracticable, because 'complete' is neither operational nor measurable."[3 4]

Need for reformulation

Various proposals have been made for adapting the definition of health. The best known is the Ottawa Charter,[8] which emphasises social and personal resources as well as physical capacity. However, WHO has taken up none of these proposals.

Nevertheless, the limitations of the current definition are increasingly affecting health policy. For example, in prevention programmes and healthcare the definition of health determines the outcome measures: health gain in survival years may be less relevant than societal participation, and an increase in coping capacity may be more relevant and realistic than complete recovery.

Redefining health is an ambitious and complex goal; many aspects need to be considered, many stakeholders consulted, and many cultures reflected, and it must also take into account future scientific and technological advances. The discussion of experts at the Dutch conference, however, led to broad support for moving from the present static formulation towards a more dynamic one based on the resilience or capacity to cope and maintain and restore one's integrity, equilibrium, and sense of wellbeing.[6] The preferred view on health was "the ability to adapt and to self manage."

Participants questioned whether a new formulation should be called a definition, because this implied set boundaries and trying to arrive at a precise meaning. They preferred that the definition should be replaced by a concept or conceptual framework of health. A general concept, according to sociologist Blumer,[9] represents a characterisation of a generally agreed direction in which to look, as reference. But operational definitions are also needed for practical life such as measurement purposes.

The first step towards using the concept of "health, as the ability to adapt and to self manage" is to identify and characterise it for the three domains of health: physical, mental, and social. The following examples attempt to illustrate this.

Physical health

In the physical domain a healthy organism is capable of "allostasis"—the maintenance of physiological homoeostasis through changing circumstances.[10] When confronted with physiological stress, a healthy organism is able to mount a protective response, to reduce the potential for harm, and restore an (adapted) equilibrium. If this physiological coping strategy is not successful, damage (or "allostatic load") remains, which may finally result in illness.[11]

Mental health

In the mental domain Antonovsky describes the "sense of post-traumatic stress disorders.[12 13] The sense of coherence includes the subjective faculties enhancing the comprehensibility, manageability, and meaningfulness of a difficult situation. A strengthened capability to adapt and to manage yourself often improves subjective wellbeing and may result in a positive interaction between mind and body—for example, patients with chronic fatigue syndrome treated with cognitive behavioural therapy reported positive effects on symptoms and wellbeing. This was accompanied by an increase in brain grey matter volume, although the causal relation and direction of this association are still unclear.[14]

Social health

Several dimensions of health can be identified in the social domain, including people's capacity to fulfil their potential and obligations, the ability to manage their life with some degree of independence despite a medical condition, and the ability to participate in social activities including work. Health in this domain can be regarded as a dynamic balance between opportunities and limitations, shifting through life and affected by external conditions such as social and environmental challenges. By successfully adapting to an illness, people are able to work or to participate in social activities and feel healthy despite limitations. This is shown in evaluations of the Stanford chronic disease self management programme: extensively monitored patients with chronic illnesses, who learnt to manage their life better and to cope with their disease, reported improved self rated health, less distress, less fatigue, more energy, and fewer perceived disabilities and limitations in social activities after the training. Healthcare costs also fell.[15 16]

If people are able to develop successful strategies for coping, (age related) impaired functioning does not strongly change the perceived quality of life, a phenomenon known as the disability paradox.[17]

Measuring health

The general concept of health is useful for management and policies, and it can also support doctors in their daily communication with patients because it focuses on empowerment of the patient (for example, by changing a lifestyle), which the doctor can explain instead of just removing symptoms by a drug. However, operational definitions are needed for measurement purposes, research, and evaluating interventions.

Measurement might be helped by constructing health frames that systematise different operational needs—for example, differentiating between the health status of individuals and populations and between objective and subjective indicators of health. The measurement instruments should relate to health as the ability to adapt and to self manage. Good first operational tools include the existing methods for assessing functional status and measuring quality of life and sense of wellbeing. WHO has developed several classification systems measuring gradations of health.[18] These assess aspects like disability, functioning, and perceived quality of life and wellbeing.

In primary care, the Dartmouth Cooperative Group (COOP)/Wonca (the world organisation of family doctors) assessment of functional status, validated for different social and cultural settings, has been developed to obtain insight into the perceived health of individuals. The COOP/Wonca Functional Health Assessment Charts present six different dimensions of health, each supported by cartoon-like

Such instruments offer valuable information about a variety of aspects, from functioning to the experienced quality of life. Yet there are few instruments for measuring aspects of health like the individual's capacity to cope and to adapt, or to measure the strength of a person's physiological resilience. A new formulation about health could stimulate research on this.

Conclusion

Just as environmental scientists describe the health of the earth as the capacity of a complex system to maintain a stable environment within a relatively narrow range,[21] we propose the formulation of health as the ability to adapt and to self manage. This could be a starting point for a similarly fresh, 21st century way of conceptualising human health with a set of dynamic features and dimensions that can be measured. Discussion about this should continue and involve other stakeholders, including patients and lay members of the public.

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1 WHO. Constitution of the World Health Organization. 2006. www.who.int/governance/eb/who_constitution_en.pdf.
2 What is health? The ability to adapt [editorial]. *Lancet* 2009;373:781.
3 Jadad AR, O'Grady L. How should health be defined. *BMJ* 2008;337;a2900.
4 Smith R. The end of disease and the beginning of health. BMJ Group Blogs 2008. http://blogs.bmj.com/bmj/2008/07/08/richard-smith-the-end-of-disease-and-the-beginning-of-health/.
5 Larson JS. The conceptualization of health. *Med Care Res Rev* 1999;56;123-36.
6 Health Council of the Netherlands. Publication A10/04. www.gezondheidsraad.nl/sites/default/files/bijlage%20A1004_1.pdf.
7 Kanungo S, Tsuzuki A, Deen JL, Lopez AL, Rajendran K, Manna B, et al. Use of verbal autopsy to determine mortality patterns in an urban slum in Kolkate, India. *Bull World Health Organ* 2010;88:667-74.
8 Ottawa Charter for Health Promotion. www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf.
9 Blumer H. Symbolic interactionism: perspective and method. Prentice Hall, 1969.
10 Schulkin J. Allostasis, homeostasis, and the costs of physiological adaptation. Cambridge University Press, 2004.
11 McEwen BS. Interacting mediators of allostasis and allostatic load: towards an understanding of resilience in aging. *Metabolism* 2003;52(suppl 2):10-6.
12 Antonovsky A. Health, stress and coping. Jossey-Bass, 1979.
13 Antonovsky A. The sense of coherence as a determinant of health. In: Matarazzo J, ed. Behavioural health: a handbook of health enhancement and disease prevention. John Wiley, 1984:114–29.
14 De Lange FP, Koers A, Kalkman JS, Bleijenberg G, Hagoort P, Van der Meer JWM, et al. Increase in prefrontal cortical volume following cognitive behavioural therapy in patients with chronic fatigue syndrome. *Brain* 2008;131:2172-80.
15 Lorig KR, Sobel DS, Stewart AL, Brown BW, Bandura A, Ritter P, et al. Evidence suggesting that a chronic disease self management program can improve health status while reducing utilization and costs: a randomized trial. *Med Care* 1999;37:5-14.
16 Lorig KR, Ritter PL, González VM. Hispanic chronic disease self management: a randomized community-based outcome trial. *Nurs Res* 2003;52:361-9.
17 Von Faber M, Bootsma-van der Wiel A, van Exel E, Gussekloo J, Lagaay AM, van Dongen E, et al. Successful aging in the oldest old: who can be characterized as successfully aged? *Arch Intern Med* 2001;161:2694-700.
18 WHO. WHO family of international classifications.www.who.int/classifications.
19 Van Weel C, König-Zahn C, Touw-Otten FWMM, van Duijn NP, Meyboom-de Jong B. Measuring functional health status with the COOP/Wonca charts. Northern Centre for Health Care Research, University of Groningen, 1995. www.globalfamilydoctor.com/research/research.asp?refurl=r#R4.
20 Nelson E, Wasson J, Kirk J, Keller A, Clark D, Dittrich A, et al. Assessment of function in routine clinical practice: description of the COOP Chart method and preliminary findings. *J Chron Dis* 1987;40(suppl 1):55S-63S.
21 Rockström J, Steffen W, Noone K, Persson Å, Chapin AS, Lambin EF, et al. A safe operating space for humanity. *Nature* 2009;461:472-5.

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