Obesity as Disease: A perspective from evolutionary biology and philosophy

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Numerous arguments for regarding obesity as a disease – presume that if some set of criteria are met, then it is a disease. Disagree about the criteria (as well as the facts). But what are those criteria?
Normativist or constructivist views argue that diseases are phenotypes that are highly disvalued by a society. This idea became popular with the ‘anti-psychiatry’ movement: Szasz, T., 1987. Insanity, New York: Wiley. It has a close analogue in contemporary disability studies, which denies that there is an objective basis on which to identify a phenotype as a disability.

For an good defense of a normativist view, see


Naturalist, or objectivist views argue that there is an objective, biological difference between function and dysfunction, and that diseases are phenotypes which fail to perform their function (C. Boorse).

An obvious compromise is a ‘harmful dysfunction’ theory (Wakefield, J.C., 1992. “The Concept of Mental Disorder,” *American Psychologist*, 47: 373–388.). This says that diseases are phenotypes which fail to perform their biological function and which are highly disvalued by a society.

The consensus view today seems to be normativism but with a substantial minority supporting ‘harmful dysfunction’
Normativism

‘The doctor is called by the patient’
(Canguilhem)
‘All judgments of medical or psychiatric “dysfunction” ... are fundamentally evaluative, reflecting our collective willingness or reluctance to tolerate and/or accommodate the conditions in question.’ Glackin 2010, 449
I reject Normativism
We can be sure that in this rainforest is an undescribed beetle species (Haldane joke)

Some of those beetles are in pathological states. No values here.

The concept of pathology has a role in biology as well as biomedicine. Normativism makes a mystery of the idea that pathology is an important factor in evolution, with its own distinctive dynamics, going on in the rainforest with no values present. Normativists must reconstruct concepts like parasitism and homeostasis to break links to the idea of pathology, or insist that disease in humans is normative, but in animals and plants natural.

Such deep disunity is implausible, but the idea that the disease concept applied to humans is not identical to that applied to animals is entirely plausible.

To avoid disunity we might start from general biology and then add in normative factors to deal with the complexities of human disease, maintaining the fundamental unity of the purely biological discussion of pathology and the medical discussion.
Evolutionary approach to disease

- Fundamental unity between human and non-human disease (disvalue considerations secondary)
- Diseases as impairments of function where function is interpreted in terms of evolutionary design
- DOHaD has revealed hidden complexities in the idea of ‘impairment of function’
Impairment of function

- e.g. Leptin receptor dysfunction
- The system is within normal operating parameters, but fails to discharge its function (to contribute to survival and reproduction in the respects for which it was designed)
- Call this type of dysfunction “Mechanism failure”

Satiety poorly regulated via leptin pathway leads to hyperphagia and obesity
I refer here to phylogenetic mismatch – genes do not match environment - rather than Gluckman’s PAR-style mismatch in which developmental pathway selected in early life does not match environment.
Added complexities

• One might think this is exhaustive: either the failure is due to internal or external causes; due to the wrong structure or the wrong environment (or both)
• However, there are other ways in which things can go badly for an organism
In hospitable environments

- e.g. Early flowering in drought
- The system operates as effectively as possible, in accordance with a specific evolutionary design, but the outcome is still poor
- No mechanism failure
- No mismatch
- But nevertheless, things have not gone well for this organism
- Call this way of going wrong “inhospitable environment”
Evolutionary optimisation is occurring in both *inhospitable environment* and *heuristic failure*

In the case of the bad environment, the mechanism is maximising *actual* fitness: It’s just that this maximum is low!

In the case of heuristic failure, the
mechanism is maximising *expected* fitness: It’s just that in individual cases, actual fitness can fall short of what is expected
I think this is really important – whether organism or environment is in a pathological state sometimes cannot be separated – it is the joint system that is in a pathological state.
Things are more complex than this, because multiple forms of ‘going wrong’ can occur simultaneously or sequentially.
Evolutionary medicine and disease

- Evolutionary theory should not be used to 'define disease' but to rethink the distinction between the normal and the pathological (Nesse 2011)
- DOHaD approaches to pathology suggest that the health of organisms and environments are conceptually as well as causally interdependent
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