A transition towards a healthier global population?

The latest estimates from the Global Burden of Disease (GBD) team[1] explicitly address not only increases in life expectancy, but also the extent to which additional years of life are associated with good health and the implications for the process of epidemiological transition around the world. In the period 1990–2013, they report that worldwide life expectancy at birth increased by 6·2 years (95% uncertainty interval 5·6–6·6), and healthy life expectancy at birth by 5·4 years (4·9–5·8). Although the study notes a widespread shortage of relevant data about disability, evidence such as there is suggests that years of life expectancy gained are not necessarily lived healthily.

The figure, created with data from the appendix to the GBD study,[1] shows healthy and unhealthy life expectancy for the 21 GBD world regions in 2013. A fairly consistent pattern emerges: about an eighth of life expectancy worldwide is associated with disability. In view of the noted scarcity of data about disability, and the difficulties of understanding outputs from this type of complex modelling where data are sparse,[2] it is clear that more and better data about disability are needed to estimate healthy life expectancy more reliably. Nevertheless, regional differences of just over 20 years remain in total and healthy life expectancy—about a quarter of the greatest life expectancy—between regions with the highest and lowest life expectancies. The *Lancet* Commission on Global Health 2035[3] advocated for a so-called grand convergence in health by 2035, which would address these regional differentials in total life expectancy. Convergence was postulated to be based on investment to achieve universal health coverage, including reductions in neonatal, maternal, and infectious diseases in regions where they are still common. However, such reductions might not have much of an effect on the global proportion of life expected to be lived unhealthily.

This idea of a grand convergence is related to the concept of the epidemiological transition, first proposed by Abdel Omran in 1971,[4] but which was neither entirely evidence-based nor defined in terms of specific outcomes.[5] In general terms, Omran conceptualised that causes of death in populations would move away from infectious causes of disease towards non-communicable causes as time passed, sociodemographic development

occurred, and health improved. The GBD team has coined their own concept of a sociodemographic status index[1] to track the epidemiological transition, based on important parameters that were available for all countries during the 1990–2013 time period. The sociodemographic status index includes mean national per capita income, years of schooling after age 15, total fertility rate, and age, but excludes any measure of within-population inequality because of insufficient data.[1] This is an interesting and pragmatic approach to characterisation of the epidemiological transition worldwide, but as yet has no established validity or track record for doing so. When this sociodemographic status index is mapped onto the world, 83% of countries in the fourth quartile of sociodemographic status are, unsurprisingly, located in sub-Saharan Africa.

In the accompanying GBD study,[1] figure 5 shows very clearly how various causes of years of life lost due to premature mortality (YLL) and years lived with disability (YLD) are related to sociodemographic status. The world's lowest quartile countries, shown at the top of figure 5, carry a huge additional burden of neonatal, maternal, and infectious disease, on top of broadly
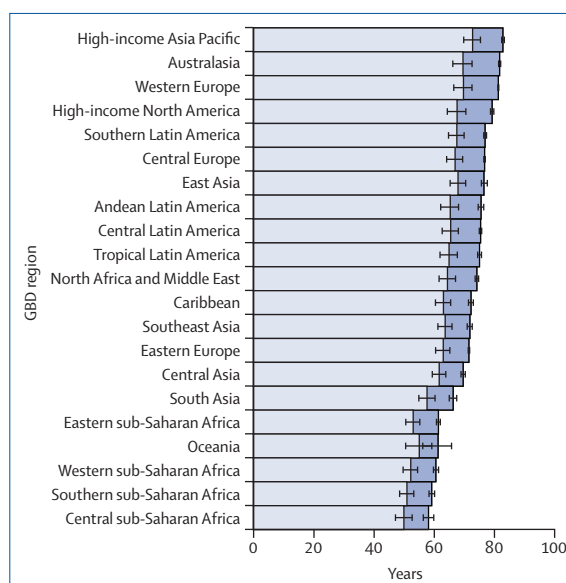
Figure: **Healthy life expectancy (light bars) with 95% UI and total life expectancy (dark bars) with 95% UI, by GBD world regions**
Visible parts of dark bars represent the proportion of total life expectancy associated with disability. Data about life expectancy and healthy life expectancy (with 95% UIs) for each GBD region in 2013 taken from GBD appendix (pp 1159–62).[1] UI=uncertainty interval. GBD=Global Burden of Disease.

similar rates of other causes. This finding supports large-scale empirical results from the INDEPTH Network, which showed that infectious causes were the main driver of overall mortality differentials across Africa and Asia.[6] Conceptually, it is important to understand that countries which have mostly achieved control of neonatal, maternal, and infectious disease mortality inevitably have a substantially increased proportion of total mortality attributable to non-communicable causes. Contrary to some popular portrayals, high proportions of mortality from non-communicable causes do not necessarily constitute epidemics of non-communicable disease. Absolute rates of many non-communicable causes of death and disability are actually remarkably consistent worldwide and estimated by GBD to be largely independent of sociodemographic status.[1] To some degree, this finding contradicts Omran's ideas of infectious diseases being replaced by non-communicable ones as the transition proceeds.

Meanwhile, in terms of relevant policy developments, July, 2015, saw a landmark agreement in Addis Ababa, Ethiopia at the United Nations Conference on Financing for Development.[7] Potentially, this agreement paves the way for the mobilisation of global resources for development, including health, in the post-2015 era, which would be a prerequisite to achieve any kind of global grand convergence. The Sustainable Development Summit in New York, USA planned for September, 2015, and the UN climate negotiations in Paris, France in December, 2015, will be further waypoints. Effective agreement on climate change could also be a great opportunity for global health.[8]

Overall, can convergence be seen in terms of where global health is heading? The GBD modelling,[1] the INDEPTH evidence,[6] the Global Health 2035 convergence concept,[3] and the UN path towards agreement on sustainable development and climate change all point in the same direction: better and more equal health is possible globally. The world needs its fourth quartile countries to catch up in terms of epidemiological transition, and to catch up fast. The question that remains is whether the world has the collective will to make that happen?

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