

## Healthy Life Expectancy Is Expanding

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This is a very complex issue given that the issue involves many factors, including genetics, socioeconomic status, culture, and the quality and availability of healthcare services. Furthermore, it is not easy to define many of the above elements (e.g., culture, quality). Even if we could, determining the individual effects of components that we know can influence healthy life expectancy (HLE) (to say nothing of those “unknown unknowns”) is exceedingly complicated, but we do know some things that can help address the question.

First, although it may sound absurdly obvious, most of us prefer to be alive than dead—at almost any age and no matter what our health status. Life expectancy is increasing at all ages in the developed world and has been for quite a while. As well, the rates of being alive and the number of those who manage to reach old age (i.e. who do not die prematurely) surely reflect some of the great successes of public health over the last 150 years.

That being said, how exactly are we supposed to define the “healthy” component of HLE? Despite the greater number of morbidities that members of older adults experience on average, there is still a U-shaped curve, with a rising sense of psychological well-being from middle age into old age.<sup>1</sup> In this case, who are we (usually relatively young academics) to say that an elderly person who “suffers” from hypertension, osteoarthritis, or stable heart disease or may have recently undergone cancer chemotherapy, but who feels better than a younger counterpart (or than he himself did when still climbing the curve) is not as “healthy” as the younger person?”

Beyond these philosophical questions, do we have any hard data? There are some. As alluded to above, in most parts of the world, over the last 150 years, life expectancy has been on a continuous rise. In addition, increases in life expectancy have been consistently underestimated

over the last 150 years.<sup>2</sup> Malthus, who lived to only 68, is probably rolling over in his grave for having made the first of many overly pessimistic forecasts by actuaries.<sup>3</sup>

Other more modern demographically minded Cassandras have warned of rising elderly dependency ratios—defined as the number of those who have reached state pension age divided by the number of working-age (16–64) adults. This ratio is meant to estimate the proportion of older persons to those who “pay for them.” For the moment, let us ignore the fact that, at least in the more developed regions of the world, many older persons are paying their own way out of previous savings and pension investments.

With an increasingly healthy older population, many of whom will continue to work, especially in the developed world, a “real elderly dependency ratio” has been calculated. Reassuringly, at least for England and Wales, it predicts stabilization out to 2050, hardly consistent with an increasingly disabled older population.<sup>4</sup> So far, the pessimists have been proven wrong, and their continuing negative prognostications may well continue to be ill founded.

When life expectancy and HLE fall, such as is the case, for example, in the post-Communist former Soviet Union<sup>5</sup> or more recently for white, non-Hispanic Americans,<sup>6</sup> these decreases are largely due to treatable conditions such as drug and alcohol abuse, suicide, and chronic liver disease, all of which have recrudesced largely for social and economic reasons. This deterioration is especially evident in less-well-educated individuals.

The fact that these indices deteriorate when people abuse their health (at least in part as a result of social dislocation and socioeconomic disparities) or are denied equitable and reasonable health services suggests that, in the absence of such negative factors, people will be more likely to age in reasonably good health. In support of this notion, it appears that initiating a “healthy” lifestyle (the earlier the better), even at an older age ( $\geq 70$ ), can have a beneficial effect on life expectancy.<sup>7</sup>

Even if we are living longer, are we experiencing less “age-related” disease? Happily, it appears that, for many common, devastating conditions, such as heart disease<sup>8</sup> and dementia,<sup>9</sup> the answer is mostly positive.

Because older people are generally sicker than their younger counterparts and the absolute number of older persons is rising throughout the world, the prevalence and

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See the response from Olshansky.

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resulting overall burden of these conditions are increasing, but it is the *relative* question that interests us. If elderly adults are healthier today than were earlier ones (or can be healthier in the absence of negative influences—e.g., subpopulations in the United States and the Former Soviet Union as discussed above), this can only be considered good news.

This happy phenomenon has been observable for quite a long time now. For example, a previous study compared cohorts of U.S. Civil War veterans with those who served in World War II; the latter cohort had a much healthier old age than its earlier counterpart.<sup>10</sup> The authors were surprised to discover that “chronic diseases began earlier in the life cycle and were more severe at the beginning of the twentieth century than at the end.” If this has been the case before, why should it not continue?

In addition to a fall in disease incidence, one can also examine some indirect yet compelling lines of evidence suggesting that older people are healthier today than were earlier cohorts. For example, there is strong support over several decades in 12 countries for a decrease in the incidence of admission to geriatric long-term-care institutions. Although socioeconomic factors and government decisions to reduce the availability of nursing home beds could explain this phenomenon at least in part, the fact that these decreases were observed so widely for most relevant age cohorts suggests otherwise—that is, put simply, today’s elderly adults are healthier than were previous cohorts.<sup>11</sup>

Supporting this interpretation is a similar study by the same authority examining these cohorts indicating an ongoing fall in ADL dependency measures across the board.<sup>11</sup> Here, in contrast to the decrease in institutionalization rates, it would be difficult to adduce direct governmental policies rather than the improving health of elderly adults as an explanation.

Another intriguing indirect line of evidence involves the level of medical costs during the last year of life, which are usually the greatest for an individual during his or her life course because of the diagnosis and treatment of serious illness. Yet despite inflation and the ever-increasing complexity of health technologies, which usually result in more expensive care, even in cohorts from the United States (hardly a paragon of healthcare efficiency), less was spent on the last year of life in more recent cohorts of those who died. Although there are alternative interpretations of this intriguing yet counter intuitive finding (e.g., purposeful under treatment of dying elderly adults, an unlikely scenario), it may be that, in the spirit of “squaring of the curve” also known as “compression of morbidity,”<sup>12</sup> people are actually dying in better health! Or to put it less provocatively, they are simply sick for a shorter period of time leading up to their final demise.<sup>13</sup>

Even if not all are reaching their health potential, the recent upsurge in centenarians, and even super centenarians, indicates what can be accomplished even if we do not yet succeed for everyone. Of all the relevant factors influencing health in old age, only the genetic component, sex, and the inexorable passing of time are completely out of our control, and although our deoxyribonucleic acid is an important determinant, it hardly explains all of the variance.<sup>14</sup>

Finally, the most impressive relevant study to date involved a calculation of disability-adjusted life years for

306 diseases and HLE in 188 countries over almost the last 25 years.<sup>15</sup> As might be expected, although there was significant variability around the globe, the authors concluded that, “global health is improving.”

When teaching medical students on this subject, I end the session with a slightly tongue-in-cheek summary (cf Harry Potter’s rail platform) that the evidence for healthy aging supports 4 1/2 recommendations. First, consume a healthy diet; second, exercise throughout life; third, avoid harmful drugs, and if you do drink, and alcohol is your preferred poison, do so in moderation; and fourth, never smoke, but if you do, quit at any age. Oh yes, the final half bit of advice: pick your parents carefully.

One could even extend this final choice to picking a salubrious time and place of birth. Apart from this last demi-recommendation, the other four are relatively simple, cheap, and easy to implement. If we and our patients and we follow this simple formula, all of us are more likely to live into healthier old age than had we not.

Time will tell if this optimistic forecast will prove accurate.

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