



REVIEW

A highly desired increase in 'healthy' longevity — what are the prospects?

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'Tis not the eating, nor 'tis not the drinking that is to be blamed but the excess.

John Seldon, 1584 - 1654.

In general, mankind, since the improvement in cookery, eats twice as much as nature requires.

Benjamin Franklin, 1706 - 1790

Better to hunt in field, for health unbought, than fee the doctor for a nauseous draft.

John Dryden, 1631 - 1700

The idler never attains great age.

Thomas Easton, 1799

The salient questions

Health-wise, how far have we come? How far can we go, or rather how far could we potentially go, individually and collectively, not only in terms of longevity, but far more importantly in terms of 'healthy' longevity?

Longevity in the past

What was the situation in the distant past? Life expectancy certainly was very short. In the time of Aristotle in the 5th century BC, it was said that babies were not named for a week, since 'most' had died by then.¹

In the UK in 1880, little more than a century ago, 'gentlemen' died at an average age of 40 years, and servants at 16 years.² The very low survival time of servants was almost wholly due to the high mortality rate among the young in that social class. It is insufficiently appreciated that the average lifespan was very short in times past; many of our most gifted artists, writers, poets, and musicians, including Raphael, the Brontë sisters, Chopin, Keats, Mozart and Mendelsohn, all died unbelievably young, in their 20s or 30s.

Alexander Walker, born in Scotland, joined the staff of the South African Institute for Medical Research, Johannesburg, in 1943 forming the Human Biochemistry Research Unit. Since then, with staff, he has carried out a large variety of research projects and produced numerous publications, principally concerning nutritional practices and their sequelae, positive and negative, in the four ethnic groups. Betty Faith Walker also works in the Unit, on a part-time basis, her interests including laboratory duties and helping with publications.

Present longevity

What a contrast with the present situation! Studies indicate that in the USA, mean survival times are 78 years for white men, and 80 years for women.³ In the UK, the corresponding periods are reported to be 74 and 79 years, respectively.⁴ Furthermore, almost unbelievably, it has been reported that in the UK the number of centenarians is 'exploding'.⁵

Healthy longevity

However, what of the far more important 'healthy' longevity? A recent review by the World Health Organisation on 'Healthy life expectancy in 191 countries, 1999', described healthy life expectancy or disability-adjusted life expectancy years (DALEY), i.e. the years of 'wellness' in a large number of countries.⁶ It was stated that years of healthy life lost due to disability represent 18% of total life expectancy in low healthy life expectancy countries, and around 8% in the countries with the highest life expectancies. Although women live longer, they were reported to experience more time with disability. The longest mean healthy life expectancy was found among the Japanese (74.5 years). Surprisingly, the USA ranked 24th, with a healthy life expectancy of 70.0 years. Gabon, in 143rd position, was reported to be the most favourably placed country in sub-Saharan Africa at 48.3 years. South Africa was ranked at 160, with a healthy life expectancy of 39.8 years.⁶ However, before the advent of HIV/AIDS and in relation to total life expectancy, the black South African population probably ranked the highest among black African populations on the continent, with a mean healthy life expectancy of 63 years.⁷

Successful models

The salient question with regard to 'healthy' life expectancy is whether there is any particular population group with very high figures. In 1989 a remarkable article was published on the 'Health practices and cancer mortality among active California Mormons', showing what can be achieved.⁸ Mormons are against the use of tobacco, alcohol, coffee, tea, and drugs. Teachings urge a strong family life and good education, with sound health practices in general. A prospective study on this population was carried out over 8 years. One cohort of about 6 000 subjects consisted of middle-aged high priests and their



wives who adhered to three health practices, namely non-smoking, regular physical activity, and getting proper sleep. For calculating standardised mortality ratios (SMRs), the white population of the US was taken as 100. Remarkably, the SMR for the Mormon high priests was 37 for all cancers, 52 for cardiovascular disease, and 47 for all causes; the data for the wives of the high priests were 72, 64 and 66, respectively. It was considered that these SMRs are among the lowest, if not the lowest, among developed populations. One of the highly positive sequelae was that 'This population is currently achieving the 50% reduction in cancer mortality which the National Cancer Institute has set as a goal for the year 2000'.⁸

Another noteworthy population is Californian Seventh Day Adventists, particularly vegetarian Seventh Day Adventists.⁹ Their mean survival times, as affected by their dietary, physical activity and non-smoking habits, have been reported to be, in males and females, 81.2 and 83.9 years, and 83.3 and 85.7 years, compared with 71.7 and 77.8 in the general population of the State.

The indices of SMR and years of survival, while they are diverse parameters, clearly indicate that the lifestyles of each group promote higher than average longevity.

Present general adverse situation

As noted,⁶ in terms of 'healthy' life expectancy the USA is ranked 24th in the world, France and Denmark are reckoned 2nd and 3rd, and the UK 14th. Why is the USA ranked so much lower? Currently, the inhabitants of that country have become 'the fattest people in the world'; 61% are overweight.¹⁰ Of those under 19 years, 25% are obese or overweight, a proportion that has doubled in the last 30 years. It is well known that obesity contributes to the risk of dying not only from heart disease and diabetes, but also from cancer.¹¹ At present the situation is that in general people are working longer hours and spending more time commuting. Among children increased snacking, more television and video computer watching and cut-backs in physical education in schools are resulting in a major rise in obesity and type 2 diabetes.¹⁰

Interestingly, a study of teenage girls in Australia¹² found that within the previous month one-third had 'crash' dieted, fasted, or used pills, diuretics, laxatives, or cigarettes to lose weight. Another study of a more 'educated' group, namely a group of medical students in Maryland, USA, showed that only one-quarter ate five daily helpings of fruit and vegetables, and only 18% exercised for the recommended period daily.¹³

Chances of success

Is it conceivable that a nation, or those in a particular province, could volitionally attain life-preserving health behaviour similar to that achieved by the Mormons and Seventh Day

Adventists?^{8,9} Not likely, without compulsion. What is actually achievable in this regard was well demonstrated during World War II when compulsory national changes caused improvement in national diet, and in measure, in level of activity.¹³ Thus, in the UK, it was reported that one of the most conspicuous and surprising phenomena of the war was the way the health, vigour and stamina of the population was maintained in spite of the physical and mental stresses. Consumption of milk, brown bread, and vegetables increased.^{14,15} With regard to experience in a smaller area, it is noteworthy that in the State of Utah, with its large proportion of Mormons, the proportion of male smokers is extraordinarily low at 15%. This proportion is very close to the present goal in smoking reduction, viz. 12%.¹⁶ Yet in the State of Nevada, adjacent to Utah, the proportion of male smokers is 28.7%.¹⁶

The ideal

Is there an ideal in health/disease patterns? It has been stated that 'Nature did not intend us to grow old and ill. We were designed to die young, of old age, but free of disease ... We can prevent a substantial proportion of chronic diseases by improving lifestyle and preventive medicine. Healthy older persons can continue to be physically and intellectually productive and active into their 80s'.¹⁷

The choice is ours

Clearly, with tremendous resolve necessitating considerable changes in diet and physical activity, a much longer 'healthy' life is feasible. However, few indeed have the very high level of determination required. Recently, the responsibility of the individual in health achievement has been strongly emphasised. In the recent wide-ranging report by the WHO/FAO on 'Diet, Nutrition and the Prevention of Chronic Diseases',¹⁸ it was stated that 'There is now a large, convincing body of evidence that dietary patterns and the level of physical activity can not only influence existing health levels, but also determine whether an individual will develop chronic diseases, such as cancer, cardiovascular disease and diabetes. These chronic diseases remain the main causes of premature death and disability in industrial countries and in most developing countries.' It was considered that 'This epidemic can be halted ... however, the demand for action must come from those affected. *The solution is in our hands*' [Writer's italics].

The outlook

Admittedly, while the latter is true, at least for those in a position to alter their lifestyle, improvement is a marathon task. Indeed, it is becoming ever more exacting. Thus, a recent News item in the *British Medical Journal*¹⁹ stated that the US National Cancer Institute is launching a campaign to boost



men's fruit and vegetable consumption to 9 servings daily, and that of women to 7 servings — a plea far removed from the actual situation in that country, where less than a quarter eat 5 helpings, more than a third of the population eat only 1 or 2 servings, and 4% less than that.

So what is the all-round keep-well challenge to individuals at its briefest? In the 12th century School of Medicine in Salerno, Italy, the message was 'Use three Physicians still, first Doctor Quiet, next Doctor Merry-man and then Doctor Dyet'. Today, the ranking should be: 'Doctor Eat-less, Doctor Eat-more-plant-foods, Doctor Stop Smoking, and Doctor Exercise'.

Briefly, in developed populations there is widespread reluctance to improve diet, reduce smoking and to increase physical activity, thereby increasing 'healthy' longevity. Accordingly, as is apparent, the chances of success are remote, although conceivably more progress could be made if dietary guidelines were to provide more specific and comprehensive advice.²⁰ It could be added that there is also disappointment in the closely related field of health care. Thus a very recent review in the USA stated that 'Plans and promises for health are plentiful. Putting them into practice is not.'²¹

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IN BRIEF

Smoking risks worse than originally thought

The publication of an updated follow-up to the original study in British doctors on the mortality of smokers¹ has shown that the effects of smoking and the risks associated with it are far larger than had previously been suspected.² The study shows that half to two-thirds of current smokers will eventually be killed by their habit. The probability of lifelong non-smokers reaching age 90 has increased from 12% up to 1961 to 33% in the past decade. The likelihood among smokers declined from 10% to 7% in the same timeframe. The age at smoking initiation has decreased from adulthood in the 1950s to the teenage years and even younger in some cases. That means that the current generation of persistent smokers will face even higher excess mortality. There is some good news: quitting at any age confers benefit compared with persistent smoking, but early quitting is necessary to approximate death rates among never-smokers. This new study shows the immense value of continuing new data collection and follow-up for successfully established, long-term large cohorts. The 50 years of the British doctors study provide us with a much richer and more fully accurate picture than would be possible with a truncated follow-up.³

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