

Life expectancy: a female advantage under threat?

France Meslé *

During the 20th century, men and women the world over saw a considerable improvement in their health. At the same time, however, the inequality between the sexes expanded and women, with the advantage of a greater improvement than men, increasingly outdistanced the latter. The reasons for the female lead have been widely debated. They include biological advantage, behaviour more conducive to health, and an easier relationship with medicine [1]. Over the last two decades, nevertheless, this lead has started to reduce, first of all in the Anglo-Saxon and Nordic countries, and then more recently in France and the Mediterranean countries [2]. To what can this reversal, which is affecting the low-mortality countries one after another, be attributed? Is the excess male mortality decreasing at all ages and for all causes of death? And why does Japan, where life expectancy is the highest in the world, remain unaffected by the movement?

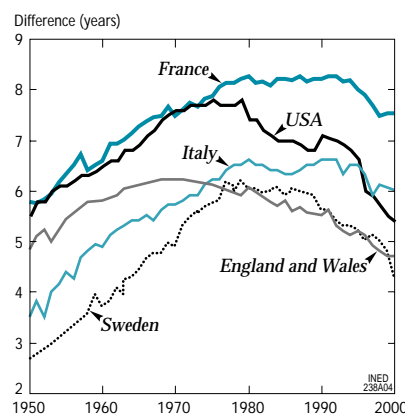
◆ Life expectancy is henceforth progressing more rapidly among men

Up to the 1970s, the difference in life expectancy between the sexes increased in the industrialised world (figure 1). Since the beginning of this decade, however, it has ceased to increase in the two Anglo-Saxon countries cited here as examples—England and Wales and the USA—and then reduced considerably. The difference in life expectancy between these two countries in 2000 was lower than that recorded for 1950 (5.4 years as against 5.5 in the US, and 4.7 instead of 4.8 in England and Wales). In Sweden, adopted here as an example of the Nordic countries, the reversal came a little later and

the difference did not lessen until 1980. The gap still amounted to 4.3 years in 2000, whereas it was only 2.8 in 1950. The pattern for France and Italy was different. After three decades of increase, the difference stabilised for some dozen years, and it is only after 1992 (in France) and 1995 (in Italy) that it really decreased. In France, it was only 7.0 years in 2003 whereas it had reached 8.2 years in the 1980s.

This reversal came about when life expectancy was still increasing for both men and women (table 1). It depended neither upon the life expectancy level nor upon the magnitude of the difference. Thus in 1970 in England and Wales the change came about when the mean length of life had just reached 71, whereas in France life expectancy exceeded 74 years when the difference stabilised, and reached almost 78 years when it started to reduce. In the USA and France, the difference in life expectancy was of the same order of size until the 1970s. For the former, the difference ceased to increase

Figure 1 – Difference in life expectancy between the sexes in 5 industrialised countries since 1950



* Institut national d'études démographiques

Table 1 – Level of male and female life expectancies and of the gap between the sexes since 1950 in selected industrialised countries

Country		Life expectancy (years)			
		1950	1970	1980	2000
England and Wales	Male	66.4	68.8	71.0	75.7
	Female	71.2	75.0	77.1	80.4
	<i>difference M-F</i>	4.8	6.2	6.1	4.7
United States	Male	65.6	67.1	70.0	74.1
	Female	71.1	74.7	77.4	79.5
	<i>difference M-F</i>	5.5	7.6	7.4	5.4
Sweden	Male	69.8	72.2	72.8	77.4
	Female	72.4	77.2	78.9	81.7
	<i>difference M-F</i>	2.6	5.0	6.1	4.3
France	Male	63.5	68.4	70.2	75.3
	Female	69.2	75.8	78.4	82.8
	<i>difference M-F</i>	5.8	7.5	8.2	7.5
Italy	Male	62.4	68.2	71.0	76.5
	Female	66.0	74.0	77.8	82.5
	<i>difference M-F</i>	3.6	5.8	6.9	6.0
Japan	Males	57.5	69.3	73.4	77.7
	Female	60.8	74.7	78.7	84.6
	<i>difference M-F</i>	3.3	5.4	5.3	6.9

from the beginning of that decade when it reached 7.5 years, whereas in France the difference only stabilised in the early 1980s, when it attained 8.2 years.

◆ The weight of chronic illnesses

After World War II, the increase in life expectancy between men and women was primarily due to the changes, less favourable for men, in mortality due to cardiovascular diseases and cancer at adult ages. Deaths from cardiovascular diseases lessened for both sexes, but at a more sustained rate for women. Cancer mortality, however, did not move in the same direction for both sexes. Among women, it remained stationary or regressed slowly, whereas among men it continued to grow. According to the country, the respective weight of these two causes of death on the life expectancy gap between the sexes varied [2]. In England and Wales and in Sweden, it was cardiovascular deaths that played a predominant role, whereas in Italy, at the time when the difference in life expectancy between the sexes reached a peak, cancer mortality almost evenly matched cardiovascular mortality, and in France had an even greater weight.

The more important role of cancers in Mediterranean countries probably explains why the reversal occurred later there. In the Anglo-Saxon and Nordic countries, the reduction in the difference between the sexes was to a large extent due to the decline of inequalities in the cardiovascular area. In Sweden, from 1980 to 1999, for example, the difference fell by 1.2 years, 0.9 of which was due to cardiovascular mortality. In France, between 1980 and 1992, the stabilisation

of the difference was due rather to the coincidence of changes in opposite directions. As in England and Wales or in Sweden during the 1980s, the trend in cardiovascular mortality contributed to reduce the difference, but that of cancer mortality, on the other hand, contributed to its growth. Although the difference remained stable as a whole, this was thanks to another factor—violent deaths—that operated towards its reduction. It was not until 1992 that the reversal of the trend in cancer mortality among men finally caused a reduction of the difference in life expectancy between the sexes.

◆ Men adopted female behaviours conducive to good health

Trends in the various causes of death depend on both medical advances and individual behaviour with regard to personal health. Since, for physiological, historical and cultural reasons, there are behavioural differences between men and women, the two sexes have not always benefited in the same way from advances in medicine [1].

Before the beginning of medical progress, in a context of very high mortality, life expectancy among men and women was approximately the same. The probable advantage of women, biologically speaking, was invalidated by the more disadvantageous living conditions, especially among the young, with less attention being paid to girls, and at the childbearing ages, with a very high risk of maternal mortality. This situation, which prevailed in European countries during the 18th century, was recently still current in the big Asian countries such as Pakistan, India and Bangladesh, where male and female life expectancies were more or less at the same level, with even an advantage sometimes for men. In Pakistan, the difference in 1995-2000 was still 0.3 years in favour of men, whereas the female advantage was 0.7 and 0.8 years in Bangladesh and India respectively [3].

The progress made in the struggle against infectious diseases restored the female biological advantage, but the process did not stop there. As life expectancy increased, men fell further behind. This lag was at first attributed to male behaviours that are more injurious to health. Greater involvement in risky occupational activities, higher consumption of alcohol and tobacco, and more frequent driving have led men to be affected earlier and more seriously than women by the emergence of “man-made” diseases. The upsurge in traffic accidents and the inexorable increase in lung cancer, to cite but two examples, contributed to the considerable difference in life expectancy between the sexes.

During the 1960s and 1970s, under the influence of the growing similarity in behaviour between men and women, it was anticipated however that this gulf would progressively close. In most countries, such was

not the case, and the life expectancy of women continued to grow faster than that of men (1). Throughout these decades, in fact, new medical progress was made in the field of cardiovascular diseases: advice on diet; early detection and treatment of risk factors (hypertension, hypercholesterolemia); new treatments (beta blockers, aspirin); surgical advances; and the development of emergency medical services (mobile units, single call number). It was women in the first place who benefited more from these advances than men. Being more attentive to their body they easily changed their diet. Being less subject to certain risk factors such as smoking, they did not have to drastically modify their behaviour. And having been closer to the medical services throughout their life, for reasons of contraception, maternity or their children's health, they took full advantage of preventive methods and new treatments.

Gradually, men also changed their behaviour and paid more attention to their health, taking advantage in their turn of the progress made in the struggle against cardiovascular diseases. Starting at a higher mortality level, they were able to make greater progress than women. This was particularly true in England and Wales and in Sweden, where the share of cardiovascular diseases in the total death toll was so massive that the accelerated decline in male mortality due to these pathologies rapidly enabled the life expectancy gap between the sexes to shrink. In Italy and France, in addition to cardiovascular diseases, then violent deaths, it required a decline in pathologies associated with smoking, and especially bronchopulmonary cancers, for the difference finally to decrease.

In France, the 1976 Veil law regulated smoking in public places, and it was reinforced in 1991 by the Evin law. These legislative measures had a marked effect on the consumption of tobacco, which has declined since 1978 [4]. This effect applies essentially to men, among whom the percentage of smokers is clearly diminishing. This proportion is stable among women, but the proportion of regular smokers on the other hand is increasing. Having regard to the long period of latency between tabagism and the development of malignant neoplasms, the effects of the fall in male consumption on deaths from bronchopulmonary cancer have only recently become evident [5]. This new trend was decisive in the reduction of the life expectancy gap between the sexes begun in France in 1992.

(1) We shall not consider here the countries of Central Europe and the former USSR, for which life expectancy only improved very slowly among women and stagnated, or even regressed, for men during the 1970s and 1980s. These unfavourable developments have led to a considerable widening of the gap between the sexes. In Russia, where the situation is at its worst, the difference in life expectancy exceeded 13 years in 2000. In Central Europe, on the other hand, more favourable recent trends have led to a reduction in this difference.

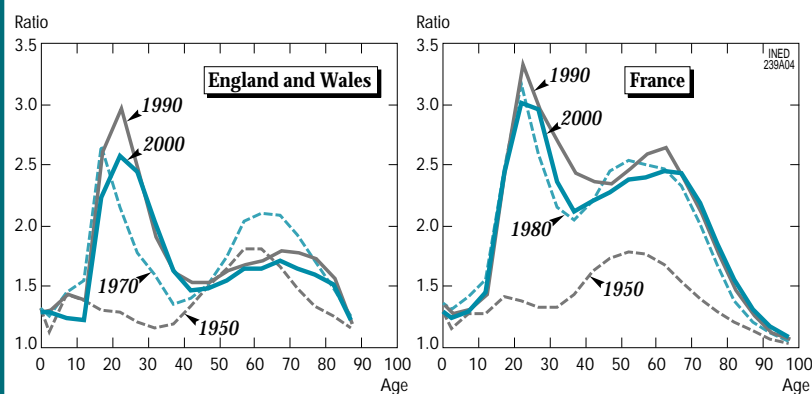
◆ An excess male mortality that does not however decline at all ages

The reduction of differences in life expectancy between the sexes does not necessarily mean that excess male mortality declines at all ages. Unlike the life expectancy gap, excess male mortality, calculated by relating the male risks of death to those for females at every age, is a relative measure of the inequalities between the sexes independent of the mortality level. The deformation of the excess male mortality curve reveals the contrasted developments from one age to another (figure 2).

Between 1950 and 1970, for England and Wales, or between 1950 and 1980, for France, the ratio of excess mortality increased considerably at all ages over 10 years. The curve took on the characteristic shape of two humps, or more precisely of a peak and a hump. The peak was due to a much higher risk of accidental death among men around 20 years of age: their probability of dying within the year was three times that for women of the same age. The hump, which covered a more extensive range of ages (between 45 and 75) but peaked at lower levels, was essentially the result of excess male mortality from cancer. Traffic accidents and cancer accounted for the greatest relative differences in mortality between men and women.

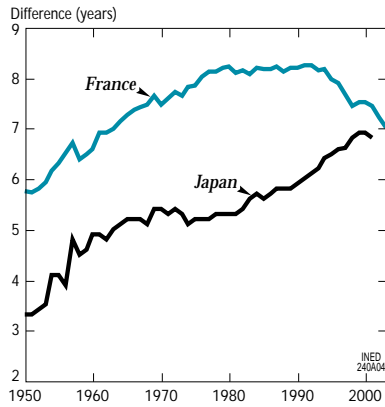
After 1970 in England and Wales, adult excess mortality reduced and the hump subsided. On the other hand, the death peak at younger ages became more pronounced and increased until 1990, before being dulled in the last decade. In France, excess male mortality continued to increase at almost all ages up to 1990, further accentuating the two humps of the age profile. During this period, the difference in life expectancy between the sexes ceased to expand without there being any stabilisation in excess male mortality. The rate of progress at each age remained more rapid for women than for men, and the stabilisation of the difference was due solely to the fact that the absolute benefits were more considerable on the male side. It was only in the last decade that there was a fall in excess male mortality before age 75, which indicates a progression

Figure 2 – Trend in the excess male mortality ratio by age groups in England and Wales and in France since 1950



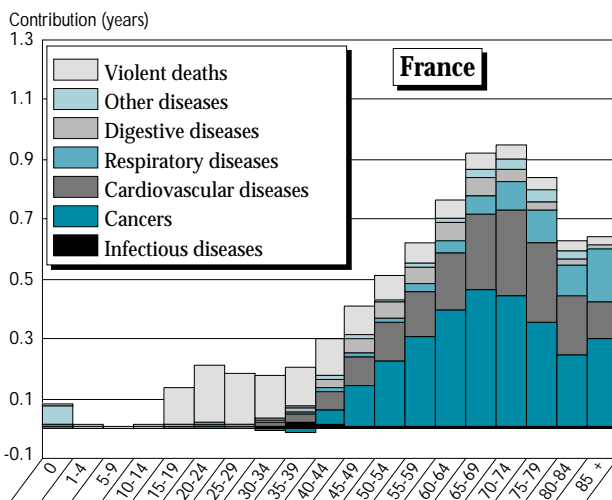
Source: WHO, INED.

Figure 3 – Trend in the life expectancy gap between the sexes in Japan and in France since 1950

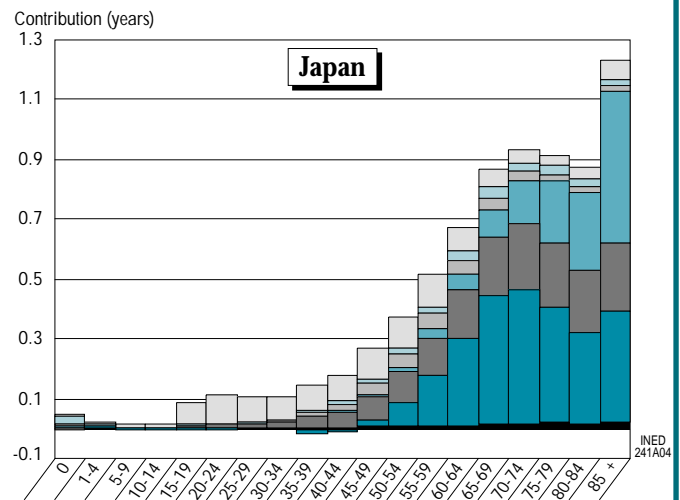


In France, violent deaths still account to a non-negligible extent for the difference in life expectancy between the sexes for ages 15 to 40. In Japan, it is the weight of respiratory diseases that has recently become important at very advanced ages. Respiratory mortality at these ages is almost stationary for women and clearly increasing for men. This recent development is impeding the progress of Japanese life expectancy and explains the continued widening of the life expectancy gap between the sexes. The example of Japan shows that, even with the highest levels of life expectancy in the world (table 1), the inequalities of health between men and women may still increase. The focus has now moved up to the oldest ages. In France, as well, mortality beyond age 80 is falling at a

Figure 4 – Contributions by age groups of the main causes of death to the life expectancy gap between the sexes in France and in Japan for the year 1999



Reading: in France, the differences in mortality between men and women at 65-69 years have contributed 0.92 years to the total difference in life expectancy (7.5 in 1999). This contribution of 0.92 years breaks down into 0.45 due to cancers (dark blue), 0.25 due to cardiovascular diseases (dark grey) etc.



henceforth more rapid among men than among women of these ages. Excess male mortality has, however, continued to grow at advanced ages.

◆ And Japan?

It is also at advanced ages that reasons have to be sought for the Japanese exception. Japan is the only country among those with low mortality where the life expectancy gap between the sexes continues to increase. It is now very close to that of France, whereas up to the early 1990s it was clearly smaller (figure 3).

In 1999, the last year for which cause-of-death statistics are available for both countries, the difference was 6.9 years in Japan and 7.5 years in France [2]. If this difference is broken down into age groups and main causes of death, the preponderant role in the two countries of cancers and cardiovascular diseases becomes apparent, with a maximum between 60 and 80 years of age (figure 4). On the other hand, the third cause is not the same in both cases.

faster rate for females than for males. If this tendency continues, women could very well regain at these ages the advantages lost at earlier ones. The inequalities of mortality between men and women are certainly not close to disappearing

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