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Using National Mortality Data to Study the Changing Sex Differential in Mortality[1]

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Despite their imperfection, national mortality data are the only comprehensive and historical source of health information available to health planners and, provided they are used prudently, can yield invaluable insights into the public health of a nation and how it compares with its neighbours. This alone should provide sufficient basis for health action, all the more so when such comparative analyses are supported by detailed epidemiological information about related aspects of the health situation of a country. This paper will attempt to show how this data source can be exploited to trace the emergence of the extraordinary gap in survival between males and females which prevails throughout the developed world today, and the immediate medical causes of death which have been responsible for this trend. However, it is emphasized that this is by no means a sufficient analysis in itself. One must proceed via epidemiological and behavioural research from the identification of such patterns to their determinants, and hence provide the basis for specific preventive measures.

Current Levels and Patterns of Sex Differentials in Mortality

Of the many summary indices of mortality rates at different ages, perhaps the most convenient for straightforward comparative purposes is life expectancy at birth in view of the widespread familiarity with this measure. Values of life expectancy at birth for males and females as computed from national mortality data are shown in Table 1 for the period corresponding roughly to the end of the 1970s. Bearing in mind that the sexes in each country generally coexist within the same socio-economic environment, with presumably equivalent access to health care, females in the USSR and Finland can nevertheless expect to outlive their male counterparts by 10 and 9 years respectively. This is in marked contrast to the gap of 4 to 5 years prevailing throughout southern and eastern Europe (Albania, Malta, Greece, Romania, Bulgaria and Yugoslavia), as well as in Ireland and Japan. Otherwise, only the broadest geographical groupings are apparent with nations of northern and southern (with the notable exception of Portugal) Europe displaying below average differentials while those for populations inhabiting the central and western part of the continent tend to be higher than average. A comparatively large gap between male and female survival is also evident in the United States and Canada and, to a lesser extent, in Australia where, interestingly, the level of excess male mortality considerably exceeds that of its closest cultural and geographical neighbour, New Zealand.

The sex difference in life expectancy at birth is, of course, the aggregate of sex differences in mortality which exist at various ages. Some idea of the relative mortality of the sexes at different stages of life can be obtained from Figure 1 which groups countries according to the shape of the relative mortality curve. In the upper left-hand panel the average age-profile based on the (unweighted) mean of age-specific sex mortality ratios is shown, along with the pattern for two countries with extreme levels of the sex mortality differential, Finland (high) and Romania (low). Two periods of life appear particularly hazardous for male survival. The first occurs at ages 15-24 years when male mortality is, on average, about 2.7 times the level for females. A second, less pronounced peak is evident towards the end of working life (55-64 years) when death rates for men are typically double those for women. What is remarkable about the Finnish pattern is the persistence of excessively high sex mortality ratios throughout adulthood with a second peak occurring 10 years earlier than average. This contrasts sharply with the comparatively low levels of excess male mortality at

Table 1 : Sex differential in life expectancy at birth, developed countries, 1975-78 Source : reference 1

Country	Period	$\mathring{e}$ (females) − $\mathring{e}$ (males)
USSR	1971-72	10
Finland	1975-77	9.0
France	1975-77	8.1
Poland	1975-78	8.0
USA	1975-78	7.9
Canada	1975-77	7.6
Luxembourg	1978	7.5
Austria	1975-78	7.1
Australia	1975-78	7.1
Czechoslovakia	1975	7.0
Portugal	1974-75*	7.0
Switzerland	1975-78	6.8
Fed.Rep.Germany	1975-78	6.7
Netherlands	1975-78	6.6
Belgium	1975-76	6.6
New Zealand	1975-78	6.5
Norway	1975-78	6.4
UK : Scotland	1975-78	6.4
UK : N.Ireland	1975-78	6.4
Italy	1975-76	6.3
Hungary	1975-78	6.3
Iceland	1975-78	6.3
UK : Eng.&Wales	1975-78	6.2
Sweden	1975-78	6.2
Denmark	1975-78	5.9
Spain	1975-77	5.9
German Dem.Rep.	1975-76	5.6
Japan	1975-78	5.3
Ireland	1975-77	5.1
Yugoslavia	1975-77	5.0
Bulgaria	1975-78	5.0
Romania	1975-78	4.7
Greece	1975-78	4.6
Malta	1975-77	4.3
Albania	1969-70	3.9

*1974 data have been included in order to obtain a more representative assessment of current mortality levels.

1) The views expressed in this paper are those of the author and do not necessarily reflect the opinions or policies of the World Health Organization.

each age in Romania where, interestingly, the absolute maximum during adolescence and early adulthood is not evident.

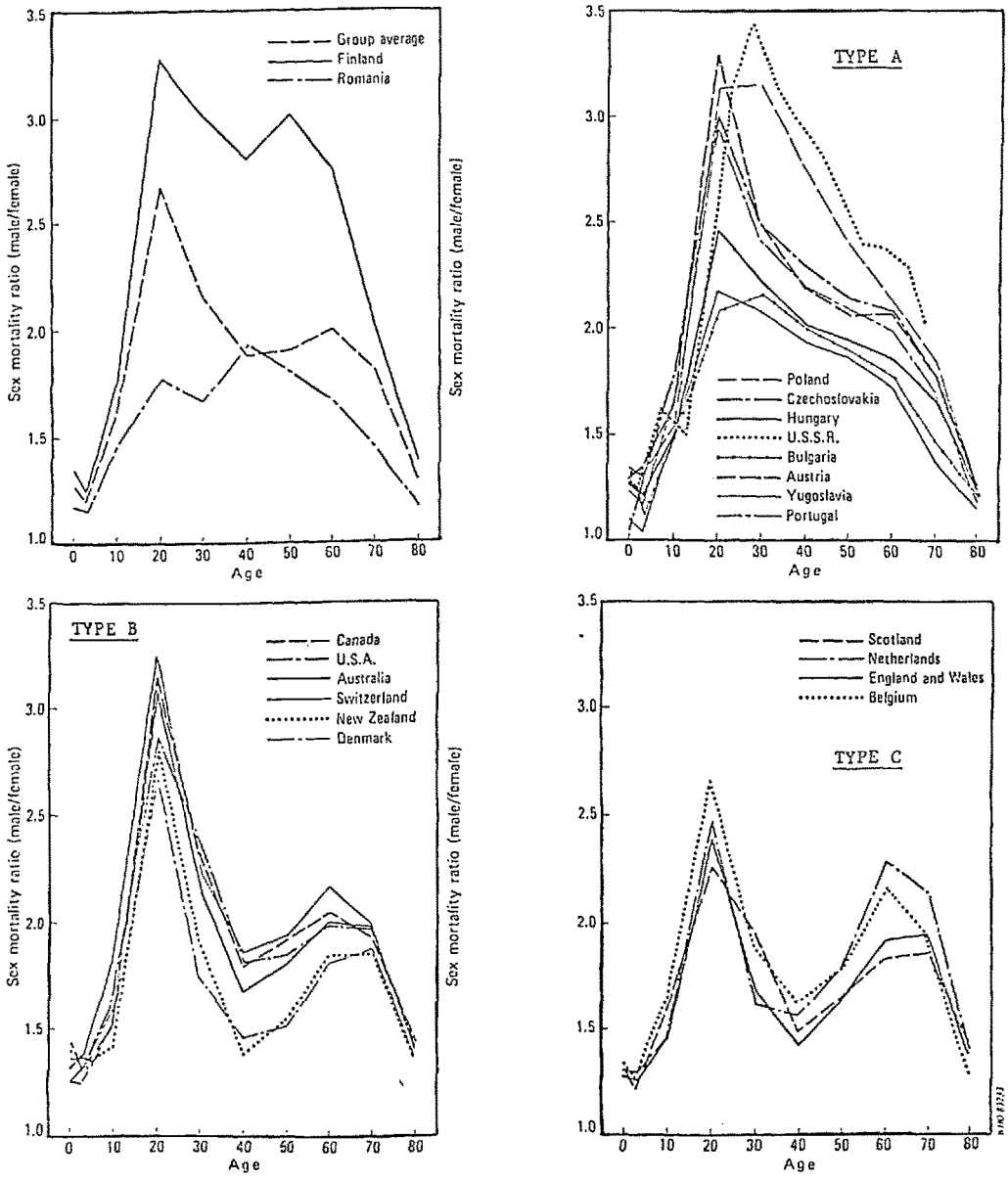
From among the remaining country age-profiles of sex differential mortality, three typical patterns emerge (for about one-third of the countries considered, the age curve of male excess mortality did not conform to one of the three basic patterns). The first of these, labelled type A, is most common among countries of southern and eastern Europe and is characterized by the absence of a second peak in the sex mortality ratio. Rather, the amount of excess male mortality declines monotonically with age after reaching a maximum during the first years of adult life. Even within this group two distinct levels are apparent with countries of north-eastern Europe, the USSR and Portugal displaying uniformly higher ratios than nations of south-eastern Europe where overall sex differentials tend to be much smaller.

The second and third types, labelled B and C in the figure, are both bimodal but differ with respect to the relative magnitude of the two peaks. Type B is typical of the overseas English-speaking countries where the primary peak in the ratio is generally well above average with the secondary peak rising to only about two-thirds its height. Type C is much more characteristic of an M shaped curve reflecting a level of male excess mortality at the older ages some 80 to 90% of the initial maximum.

The size of the sex mortality ratio at a given age depends on two components of variation, the male and female death rates. Large ratios can result from abnormally low female mortality coupled with a relatively high death rate for males or, alternatively, may reflect genuinely higher male mortality compared with other populations having a similar level of female mortality. In order to differentiate these contributions, a component analysis can be applied (for an account of the technique, see reference 1, p. 69-74). For example, in Switzerland the sex mortality ratio at ages 15-24 is among the highest in the world (3.16 compared with an average of 2.67 for the developed countries). The

Fig. 1 : Age patterns of male excess mortality, developed countries, 1975-1978

Source : reference 1



component analysis reveals that it is largely the lower than average mortality of Swiss females which is to blame rather than the slightly higher than average Swiss male mortality. Switzerland also demonstrates one of the highest sex mortality ratios at ages 65-74 years (2.01 compared with an average value of 1.81). Here again, it is the relatively low mortality of Swiss females which inflates the male/female mortality ratio. On the other hand, in Finland where the sex mortality ratio at ages 65-74 in 1975-78 was slightly greater (2.08), the higher mortality of Finnish males compared with males in other countries was the exclusive cause since the mortality rate for Finnish women was identical with the international average at these ages.

From Figure 1 it appears that there are two periods of life when excess male mortality is particularly prominent. The first peak in the sex mortality ratio occurs at ages 15-24 when external causes of death, and particular motor vehicle accidents, are largely responsible. In countries where the sex mortality difference is greatest - that is, the male-female difference in death rates at these ages exceeds 100 deaths per 100 000 population - (Austria, Portugal, Canada, USA, New Zealand, and Australia), the contribution from motor vehicle accidents is very substantial, typically accounting for more than half of the gap. This is somewhat less evident in Canada and the United States where other accidents and homicides, respectively, are a significant cause of excess male mortality.

Other countries where the overall gap in mortality between the sexes is not as large, nonetheless also display a considerably higher male than female death rate from traffic crashes. Thus in both the Federal Republic of Germany and Belgium, roughly 60% of the sex difference in death rates at ages 15-24 arises due to this cause while in Italy the proportion is closer to three-quarters.

The relative impact of those causes of death of major import for the sex mortality differential during adulthood can be seen from Table 2. A most striking feature of the table is the observation that roughly

Table 2 : Contribution of Leading Causes of Death to the Sex Mortality Differential at Ages 35-74 Years

Source : reference 1

Cause of Death	Titles in the A-list of the ICD (8th Rev.)	Average Contribution of cause		Nations with HIGHEST Male-Female Difference		Nations with LOWEST Male-Female Difference	
		%	per 100'000	Country	Observed difference per 100'000	Country	Observed difference per 100'000
Malignant neoplasms	A45-A60	19.6	139.9	France	237.4	Sweden	59.7
				Czechoslovakia	235.8	Norway	72.3
				Belgium	210.5	Denmark	73.7
				Finland	201.6	Ireland	83.6
				Netherlands	196.6		
Malignant neoplasms of lung	A54	14.3	102.5	Netherlands	180.6	Portugal	30.0
				Belgium	168.5	Japan	36.6
				UK : Scotland	162.7	Sweden	45.0
				Finland	158.9	Norway	51.0
				Czechoslovakia	158.2		
Cardio-vascular diseases	A80-A88	48.0	346.1	Finland	627.7	Greece	151.9
				UK : Ireland	512.3	Yugoslavia	186.4
				UK : Scotland	484.3	Japan	191.1
				UK : Eng. & Wales	441.4	Romania	193.8
						Bulgaria	214.8
						Spain	224.1
Ischaemic heart disease	A83	34.8	249.5	Finland	525.8	Japan	43.0
				UK : N. Ireland	439.4	Romania	88.7
				UK : Scotland	414.6	Yugoslavia	103.3
				UK : Eng. & Wales	368.5	Portugal	105.8
						France	116.2
						Spain	117.7
						Greece	127.3
Cerebro-vascular disease	A85	5.7	41.0	Japan	113.5	Greece	10.9
				Portugal	106.2	German D.R.	15.0
				Czechoslovakia	71.8	Ireland	15.9
				Hungary	68.8	New Zealand	15.9
Respiratory diseases	A89-A96	10.1	72.7	UK : Scotland	119.7	Sweden	26.2
				Czechoslovakia	114.2	Greece	32.6
				German D.R.	113.4	Norway	34.5
				UK : Eng. & Wales	107.4	Japan	38.7
						Yugoslavia	43.0
Bronchitis emphysema asthma	A93	6.3	45.0	German D.R.	92.7	Japan	12.3
				Czechoslovakia	84.9	Sweden	12.4
				UK : Eng. & Wales	67.5	France	13.5
				UK : N. Ireland	66.3	Norway	18.9
				Australia	62.5	USA	18.9
				UK : Scotland	62.3	Greece	19.3
Violence	AE138-AE150	10.0	72.0	Finland	144.4	UK : Eng. & Wales	21.3
				Hungary	126.3	Netherlands	31.1
				Poland	122.7	Greece	39.7
				Portugal	120.7	Denmark	42.4
				Austria	108.1		

one-half of the differential between the sexes in the developed countries can, on average, be directly attributed to differential mortality from the cardiovascular diseases; the contribution from ischaemic heart disease alone accounts for over one-third of the gap. A further one-fifth arises from differential mortality due to malignant neoplasms, over 70% of which reflects the excess mortality of males from cancer of the lung. Though not shown in the table, the virtually exclusive female risk from breast cancer acts to reduce the male excess in mortality by some 47 deaths per 100'000 population, amounting to about 6.6% of the net total differential. Death rates for cancer of the genital organs also tend to be marginally higher, on average, for females than males (23.2 and 20.6 per 100'000 respectively). Of the sites common to both sexes, male excess mortality from stomach cancer accounts for a little less than 4% of the sex differential whereas the contribution from male-female differences in intestinal cancers is practically negligible.

The other broad causes of death, respiratory diseases and external violence, each accounts for about one-tenth of the differential among adults, due mostly to the contributions from bronchitis, emphysema and asthma (6.3%) and accidents (3.5% from motor vehicle accidents, 4.0% from other accidents) respectively. Among the remaining causes of death of some consequence at these ages, sex mortality differences from cirrhosis of the liver contribute a further 4.0% to the difference in death rates with an additional 2.5% arising due to the higher mortality of males from suicides. In about one-half of the populations concerned, death rates from diabetes mellitus are higher for females but since the magnitude of the sex difference is never very large, the net contribution from this cause is virtually nil.

Nations with the highest and lowest sex mortality difference for each cause are also indicated in the table. One could, as for Figure 1, analyze the component contributions to the sex mortality difference in each case. This analysis reveals that large sex mortality differences arise in almost all cases due to the dominant role of higher than average male mortality. This primarily explains, for example, the large excess male mortality from lung cancer observed in the Netherlands, Belgium, Finland and Czechoslavakia and from violence in Poland, Portugal and Austria.

Low sex mortality differentials occur predominantly as a result of markedly lower than average male mortality. Some important exceptions can be noted, however. In Denmark and Ireland, the relatively small male excess in mortality from neoplasms is almost entirely due to higher than average female death rates, much of which is due to the fact that mortality from breast cancer for women in these two countries is among the highest in the world. Higher than average female mortality also accounts for roughly 50% of the comparatively low sex differential from violence in Denmark, reflecting the relatively high incidence of suicide among Danish women.

One other cause of death which is not shown in the table, cirrhosis of the liver, is also noteworthy in view of the striking geo-cultural delineation of the sex mortality pattern. The largest sex differential is to be found in Austria and Portugal where male mortality currently exceeds that of females by 72 deaths per 100'000 population. A substantial male excess in death rates also occurs in Italy (66 per 100'000), France (65), the Federal Republic of Germany (53) and Spain (50), with the level of male mortality being the primary determinant in each case. Common to all these countries is a strong wine drinking tradition with the highest per-capita consumption of alcohol, a major risk factor implicated in the etiology of the disease, in the world. To the extent that males consume more than females, their risk of death would be proportionately greater. There is some added support for this contention in the observation that the lowest male overmortality form the disease (around 5 deaths per 100'000) occurs in the United Kingdom, Norway and the Netherlands, countries where wine consumption is comparatively low.

Trends in the Sex Mortality Differential

Around the turn of the century, life expectancy at birth for females in Europe, North America and Australia-New Zealand was typically about 2 to 2-1/2 years greater than for males. In Ireland, Japan and countries of south-eastern Europe, however, the differential was much smaller, usually less than one year, and even favouring males in Northern Ireland. On the other hand, comparatively large differentials, of the order of 3.5 years or more, were already evident in Belgium, France, Germany and England & Wales, as well as in Australia. By the late 1970s, an average of 4.3 years had been added to the gap in life expectancy at birth for the sexes, with increments ranging from a little over 2 years in England and Wales to more than 6 years in Northern Ireland, Finland and the USSR. Interestingly, whereas the gap in life expectancy at birth between the sexes had begun to widen in most countries by about 1930, the female advantage in the Netherlands, Denmark, Norway and Sweden remained relatively constant at around 2 years until the middle of the century. Thereafter, male death rates levelled off while those for females continued to decline so that by the late 1970s, a further 3 to 4 years had been added to the sex differential in life expectancy at birth.

The female-male differential in life expectancy at birth represents a composite account of sex mortality differences at each stage of life. Consequently, trends in this differential reflect the net impact of changing sex patterns of mortality at each age, some of which may act to widen the differential, others to diminish it. In order to investigate how this complexity of age contributions has altered with mortality decline during the 20th century, a decomposition technique has been applied to the sex mortality differential for selected countries at two periods. Briefly, the technique has been adapted from the standardization literature whereby the effect of mortality differentials within a specified age interval can be evaluated by simultaneously controlling for sex differentials in mortality at all other ages (for an account of the method, see reference 2). The changing pattern of component contributions arising from sex mortality differences at various ages can be seen from Table 3a. A negative sign indicates that mortality differences between the sexes for that age group acted to reduce the overall female advantage in life expectancy at birth while a positively signed component signifies a reinforcing effect.

With the exception of the United States of America, evidence of higher female mortality in the younger age groups around the beginning of the century is common to all countries shown in the table. This pattern was most obvious in Ireland and Italy where the higher mortality of females between the ages of 5 and 44 years narrowed the gap in life expectancy at birth by about 0.6 of a year. Interestingly, neither sex in Ireland in the mid-1920s was favoured by mortality rates at ages 45-64 years although a small female advantage is apparent beyond age 65. Quite the reverse situation is evident in Italy, however.

Changing sex mortality patterns at ages 15-24 years, and also during the next 20 years of life, have each typically resulted in the addition of a further one-half of a year or so to the sex differential at birth. The tendency towards increasing excess male mortality during late adolescence and early adulthood has, however, been much less obvious in Sweden where the contribution over the course of the century grew

by only about 0.2 of a year. The exceptional growth of the contribution due to mortality differences at ages 25-44 years in Finland is also noteworthy. Between 1901-10 and 1975-77, sex differences in mortality at these ages accounted for about 1.1 of the 6.2 additional years of life expectancy enjoyed by females at birth compared to males, exceeding even the contribution in Italy and Ireland where the female disadvantage was quite substantial at the beginning of the period.

Clearly, though, the widening gap in life expectancy at birth between the sexes has largely arisen due to a deterioration in the relative mortality of males during middle life and at the older ages. Without exception, the contributions from the two broad age groups 45-64 and 65 years and over have increased dramatically in all six countries with the largest increments being recorded in Finland (2.32 years) and the United States (2.82 years) respectively.

These trends are strongly suggestive of a decreasing contribution from sex differences in mortality due to the communicable diseases, which afflict infants and young children in particular, and an increasing contribution from the degenerative diseases of later life. This is precisely the pattern uncovered by decomposition analysis as shown in Table 3b for a few selected countries (the decomposition methodology is described in reference 3). The year 1964 has been chosen since by the mid-1960s, the epidemiological transition had essentially been completed in the developed countries. One could have chosen a more recent date but the results would have been essentially the same).

As excepted, the significance of sex mortality differences from infections and parasitic diseases has declined dramatically during the course of the century, whilst the contributions from neoplasms and especially cardiovascular diseases have increased substantially. Thus whereas sex mortality differences from cardiovascular diseases in the United States accounted for only 0.25 years of the female advantage in life expectancy at birth (3.64 years) in 1910, by 1964 this contribution had increased 12-fold, to 3.00 years. A similar pattern is evident for Australia. Interestingly, female mortality from neoplasms exceeded that of males around the turn of the century in both Australia and the United States, but by 1964 higher male mortality from this group of diseases added roughly half a year to the female advantage in life expectancy at birth (about one-quarter of a year in Sweden). The virtual elimination of maternal mortality has had a similar impact on the widening sex differential. The higher propensity of the male sex to die from traffic crashes accounted for about one-half of a year of the female-male gap in life expectancy at birth in the mid-1960s. On the other hand, males have benefited from a sharp reduction in mortality from all other accidents and violence, due primarily to a reduction in industrial accidents following legislation to improve safety standards at the work-place.

Although not shown here, one may apply similar

Table 3a : Age components of the sex differential in life expectancy at birth, selected countries, 1900-1978

Source : adapted from reference 1

Country	Period	Contribution (in years) to the gap in life expectancy at birth due to mortality differences at ages							
		0-4	5-14	15-24	25-44	45-64	65+	Interaction	Total
Sweden	1901-10	1.13	-0.11	0.13	0.09	0.71	0.44	0.06	2.4
	1975-78	0.18	0.06	0.30	0.66	1.74	2.83	0.43	6.2
Change, 1901-10 to 1975-78		-0.95	0.17	0.17	0.57	1.03	2.39	0.37	3.8
Ireland	1925-27	0.86	-0.14	-0.21	-0.29	0.01	0.34	-0.02	0.6
	1975-77	0.27	0.09	0.33	0.46	1.64	1.97	0.34	5.1
Change, 1925-27 to 1975-78		-0.59	0.23	0.54	0.75	1.63	1.63	0.36	4.5
Italy	1901-11	0.68	-0.27	-0.13	-0.21	0.50	0.03	0.00	0.6
	1975-76	0.32	0.09	0.29	0.56	2.18	2.37	0.49	6.3
Change, 1901-11 to 1975-78		-0.36	0.36	0.42	0.77	1.68	2.34	0.49	5.7
Finland	1901-10	1.46	-0.26	0.00	0.09	1.02	0.40	0.09	2.8
	1975-77	0.22	0.10	0.45	1.22	3.34	2.63	1.04	9.0
Change, 1901-10 to 1975-77		-1.24	0.36	0.45	1.13	2.32	2.23	0.95	6.2
France	1898-1903	1.63	-0.13	0.08	0.43	0.88	0.36	0.13	3.4
	1975-77	0.22	0.08	0.46	0.89	2.62	3.04	0.79	8.1
Change, 1898-1903 to 1975-77		-1.41	0.21	0.38	0.46	1.74	2.68	0.66	4.7
USA	1900-02	1.51	0.07	0.06	0.33	0.50	0.28	0.07	2.8
	1975-78	0.28	0.09	0.56	0.92	2.20	3.10	0.73	7.9
Change, 1900-02 to 1975-78		-1.23	0.02	0.50	0.59	1.70	2.82	0.66	5.1

decomposition techniques to more recent mortality data for specific causes of death to investigate the age and cause contributions to the changing sex mortality differential. For example, between 1960-64 and 1975-78, life expectancy at birth for Hungarian males remained unchanged. This, however, masks a fascinating age pattern of mortality change. The further decline in mortality rates among children under the age of 15 would have added a further 1.5 years to life expectancy at birth; this was countered though by rising mortality at other ages, particularly for men at ages 45-54 where the increase acted to reduce life expectancy at birth by more than one half of a year.

Decomposition analyses applied to causes of death suggest that slightly more than one half of the increase in the sex mortality difference at ages 35-74 years since 1955-59 has occurred due to diverging mortality trends of men and women from heart diseases, with a further 25% arising from increasing excess male mortality from cancer of the lung. Trends in mortality from violence, especially industrial accidents, have benefited males more than females, as has the rise in death rates from breast cancer. Conversely, the declines in mortality from cancer of the genital organs have been of greater benefit to women.

One final aspect of the post-war development in the differential mortality of the sexes is worthy of note. Commencing around the early 1960s, the sex ratio of mortality from lung cancer began to decline in the United States and England and Wales, followed some years later by Australia, Sweden and Denmark. In other words, whilst male death rates from lung cancer are still typically four to five times higher than those for females in these countries, the rates are increasing faster for women than for men. A clear cohort effect can be demonstrated with the male/female ratio of death rates first beginning to decline in those cohorts where women began to smoke in ever increasing numbers (see reference 1, p. 112-115).

Discussion

Despite the many caveats associated with the use of international mortality data, their prudent interpretation can greatly assist in the identification of major public health problems. Certainly, the increasing excess mortality of males is of much more than mere scientific interest since this phenomenon has widespread social, economic and public health consequences - the increasing proportion of lonely widows and lost economic productivity are two of the most obvious. One can exploit the rich body of international data on age, sex and cause of death to specify the descriptive epidemiology of the problem in terms of its magnitude and the contributory pattern according to age and cause of death. Moreover, time series data can be analyzed via an appropriate decomposition technique to trace the evolution of the widening sex differential over time. In the absence of a suitable biological quantification of what the sex differential in mortality should be, comparative analyses of the sex mortality pattern between countries at a similar level of health development can be used to pinpoint the nature and extent of excess male mortality in any given country.

Descriptive analyses of this type, however, can only carry the public health process so far. This analysis must then be supplemented by epidemiological research about the nature of the risk factors underlying the causes of death identified as being primarily responsible for the trend - in this case, coronary heart disease, lung cancer, bronchitis and emphysema, and motor vehicle accidents. This in turn must be consistent with known sex differences in the prevalence of risk factors which often, as in the case of cigarette smoking, requires long time series of consumption patterns. Furthermore, sex differences in mortality are likely to vary considerably among different population subgroups, e.g. socio-economic categories. To effectively counter the problem, public health action must be primarily directed at those subgroups where male overmortality is highest, almost surely the lower socio-economic groups where detrimental health behaviour is more widespread.

However, until health information systems are sufficently developed to respond to these needs,

Table 3b : Contribution of broad causes of death to trends in the sex mortality differential, selected countries, 1910-1964

Source : adapted from reference 1

Year	Contribution (in years) to the sex differential in life expectancy at birth due to sex mortality differences from :							Sex[a] differential in life expectancy at birth (in years)
	Infectious and parasitic diseases	Influenza/ pneumonia/ bronchitis	Neoplasms	Cardiovascular diseases	Complications of pregnancy	Motor vehicle accidents	All other accidents and violence	
	Australia							
1911	0.67	0.33	-0.09	0.32	-0.53	0.00	1.47	3.81
1964	0.07	0.46	0.46	2.79	-0.04	0.63	0.63	6.37
	Sweden							
1911	-0.07	0.42	0.03	0.07	-0.27	0.00	1.55	2.90
1964	0.06	0.12	0.22	1.76	-0.02	0.39	0.88	4.29
	USA							
1910	0.97	0.49	-0.46	0.25	-0.47	0.03	1.65	3.64
1964	0.09	0.19	0.45	3.00	-0.04	0.58	0.86	6.87

[a] That is, the excess of female over male life expectancy at birth. The sum of the cause-specific contributions does not correspond to the total sex differential in this column since only the contributions for selected causes are shown.

public health planners will continue to rely largely on national mortality data to identify health priorities and to formulate health strategies accordingly.

Summary

Sex differences in mortality vary widely among the developed countries. Male overmortality is highest in Finland and the USSR, followed closely by France, Poland, the USA and Canada. The differential is lowest in Japan, Ireland and in south-eastern Europe. The sex mortality ratio is highest at ages 15-24 years with a second peak generally occurring around age 60. The excess mortality of males at the younger ages is due largely to motor vehicle accidents while higher death rates from heart diseases and lung cancer in particular account for a substantial proportion of male excess mortality during the later years of working life. During the course of the 20th century, the impact of sex differences in mortality from the infectious and parasitic diseases has declined, as has the contribution from maternal mortality. Males have also benefited from a decline in industrial accidents but this has been more than countered by rising death rates from heart diseases, lung cancer and motor vehicle accidents.

L'utilisation des données nationales de mortalité pour l'étude de la mortalité différentielle selon le sexe

Les différences de mortalité entre les sexes varient largement entre les pays développés. La surmortalité masculine est la plus élevée en Finlande et en URSS, suivis de près par la France, la Pologne, les Etats-Unis et le Canada; les différences les plus basses sont observées au Japon, en Irlande et dans le Sud-Est de l'Europe. Le différentiel de la mortalité selon le sexe est le plus élevé entre 15 et 24 ans, avec un second pic s'observant autour de l'âge de 60 ans. L'excès de mortalité chez les hommes jeunes est principalement dû aux accidents de circulation, alors que les cardiopathies et le cancer pulmonaire sont principalement responsables de la surmortalité masculine observée à la fin de la période d'activité professionnelle. Durant le 20e siècle, l'impact des différences de mortalité dû aux maladies infectieuses et parasitaires a baissé, ainsi que la contribution due à la mortalité maternelle. Les hommes ont profité d'une diminution des accidents dans le milieu de travail, mais ceci a été plus que contrebalancé par une augmentation des taux de mortalité par cardiopathies, cancer pulmonaire et accidents de véhicules à moteur.

Analyse der Sterblichkeit nach Geschlecht mithilfe nationaler Todesursachenstatistiken

Die Geschlechtsunterschiede in der Sterblichkeit variieren stark zwischen den entwickelten Ländern. Die männliche Uebersterblichkeit ist am höchsten in Finnland und der UdSSR, gefolgt von Frankreich, Polen, den Vereinigten Staate und Kanada. Die kleinsten Unterschiede werden in Japan, Irland und im Süd-Osten Europas beobachtet. Die Unterschiede in der Sterblichkeit nach Geschlecht sind am höchsten zwischen 15 und 24 Jahren, mit einer zweiten Spitze um das 60. Altersjahr. Die Uebersterblichkeit bei den jungen Männern wird durch Verkehrsunfälle erklärt, während die Kardiopathien und der Lungenkrebs für die männliche Uebersterblichkeit am Ende der berufliche Periode verantwortlich sind. In diesem Jahrhundert haben sich die Einflüsse der infektiösen und parasitären Krankheiten verkleinert, gleichermassen wie die Bedeutung der Müttersterblichkeit. Die Männer haben von einer Senkung der Sterblichkeit durch Berufsunfälle profitiert, was jedoch mehr als kompensiert wird durch eine Zunahme der Sterblichkeit durch Kardiopathien, Lungenkrebs und Verkehrsunfälle.

References

1. Lopez A.D. The sex mortality differential in developed countries. In Lopez A D and Ruzicka L T (eds.), Sex Differentials in Mortality: Trends, Determinants and Consequences. Canberra: Department of Demography, The Australian National University, 1983: 53-120.

2. Lopez A. D. and Ruzicka L. T. The differential mortality of the sexes in Australia. In McGlashan N D (ed.), Studies in Australian Mortality. Hobart: University of Tasmania, Environmental Studies Occasional Papers No. 4, 1977: 75-94.

3. Retherford R. D. The Changing Sex Differential in Mortality. Westport, Connecticut: Greenwood Press. 1975.