Cardiovascular mortality among immigrants to England and Wales

M. G. MARMOT*
M.B., B.S., B.Sc., PhD.

A. M. ADELSTEIN*
M.D., F.R.C.P.

L. BULUSU†

*Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine, Keppel Street, London, and the †Office of Population Censuses and Surveys, Somerset House, London

Summary

The Office of Population Censuses and Surveys (OPCS) is analysing mortality of immigrants to England and Wales. On average, immigrants are healthier and have a lower mortality than people who remained in the country of origin—demonstrating the 'selection' effect of migration. For cardiovascular diseases, the mortality of immigrants reflects the pattern in the country from which they came. Thus, immigrants to England and Wales from France, Spain and Italy (low-rate countries) have a low standardized mortality ratio from ischaemic heart disease. Immigrants from the West Indies and Africa have a high mortality from hypertension and cerebrovascular disease. It is noted that the mortality from ischaemic heart disease is high among immigrants from India and Pakistan.

Introduction

The study of mortality patterns of migrants can shed light on the causes of disease, and may help clarify the extent to which international differences in disease are due to differences in diagnosis and coding.

The Office of Population Censuses and Surveys is analysing mortality of immigrants to England and Wales. In this paper examples are given to show how these studies contribute to both questions.

For this analysis the 1971 census provides estimates of the populations at risk. Medical certificates of deaths in 1970-72, coded to country of birth, provide the 'numerator'. Figures are standardized for age, using standardized mortality ratio (SMR), with England and Wales as the standard SMR of 100 (Office of Population Censuses and Surveys, 1981, unpublished information).

Validity of international differences in mortality from ischaemic heart disease

Figure 1 shows mortality from ischaemic heart disease (IHD) in selected European countries in

1970-72. The low rates in France are particularly striking. There are several possible explanations for international differences in disease rates. Various commentators have speculated that this difference between France and England, like other international differences, reflects not differences in the rate of death from ischaemic heart disease, but differences in diagnostic or coding practice; genetic differences between people in different countries, and differences in environment and life style have also been implicated.

FIG. 1. Standardized mortality ratios (SMR) (England and Wales as standard) of ischaemic heart disease in different countries 1970-72 (Ages 15-64 years).

The mortality patterns of immigrants may help to choose among competing explanations. Certainly there is no reason to suspect bias from diagnosing or coding within a host country, while effects of environment and of heredity may be sorted out, especially in changes over time.

If the differences in IHD mortality between France (29) on the one hand, and England and Wales (100) on the other, are due solely to differences in diagnosis between countries one would expect these differences not to apply to migrants. In which case, the IHD mortality of the migrants would be close to that of all residents of England and Wales. The expected mortality might thus be an SMR of 95, not 100.

TABLE 1. Mortality from ischaemic heart disease among immigrants (aged 20–69 years) to England and Wales, compared with mortality in country of origin.* Standardized mortality ratio (SMR) of England and Wales = 100

Country of birth	Males		Females		Country of origin SMR
	Deaths	SMR	Deaths	SMR	
Spain	34	62	8	39	24
Italy	102	63	30	62	46
U.S.A.	201	105	46	87	160
Scotland	2996	117	826	123	167

*Age 15–64 years. The SMRs of people aged 15–74 years were similar to those shown above.

because migrants may be a select group and be healthier than the average. The all-cause mortality for French migrants was, in fact, only 95% of that for all England and Wales, and was lower than that prevailing in France.

If the differences in IHD mortality between France and England and Wales are due to the effect of difference in the environments, taking this broadly, we should expect that the migrants from France would tend to assume the mortality rates of England and Wales. If the factors that influence occurrence of IHD are in some way 'pre-set' before migration, the mortality rate of the migrants would resemble that of France. This 'pre-setting' could be the result of genetic differences, of the influence of early environment and/or of the development of patterns of living that persist after migration.

FIG. 2. Standardized mortality ratios (SMR) from (a) ischaemic heart disease and (b) from 'all circulatory disease' in France (■) and among French immigrants (▨) to England and Wales—compared with SMR in England and Wales of 100.

In fact, the SMR for IHD among migrants from France to England and Wales is intermediate between the low figures in France and the higher figure of 100 in England and Wales (Fig. 2). That some of the increase in the IHD mortality of

migrants compared with the home country may be due to abolition of diagnostic differences is indicated by the figures for all circulatory disease. The French figures are closer to those for England and Wales, but there are still substantial differences between the migrants and the figures for all England and Wales (100).

The conclusion from this is that differences in official rates of heart disease mortality between France and England and Wales are not due simply to differences in diagnosis or coding and that the differences, to some extent, persist after migration.

Table 1 shows a similar pattern for other countries. The IHD mortality for men who have migrated is intermediate between the rate prevailing in the old country and the rate for England and Wales (100). This is true whether the country of origin has a lower IHD mortality than England and Wales (Spain and Italy); or a higher IHD mortality (U.S.A. and Scotland). The same pattern is seen for women where also, with the exception of the U.S.A., the SMR for migrants is intermediate between the rates in the old country and in England and Wales.

Mortality from hypertensive disease and cerebrovascular disease

Table 2 shows one of the more dramatic findings to come from the analyses. For hypertensive

TABLE 2. Standardized mortality ratios (SMR) from vascular disease among immigrants from Africa and West Indies. SMR of England and Wales = 100

	Africa		West Indies	
	Males	Females	Males	Females
Hypertensive disease	447	449	397	664
Ischaemic heart disease	105	78	44	84
Cerebrovascular disease	203	190	207	225

disease, the migrants from Africa have 4.5 times the mortality of England and Wales; the migrants from the West Indies have up to 6.6 times the mortality. In both groups, mortality from cerebrovascular disease similarly is increased sharply but mortality from IHD is low.

Nearly all immigrants from the West Indies are of

TABLE 3. Proportional mortality ratios (PMR) from vascular disease among immigrants from Africa—separately for African and Indian ethnic groups. PMR of England and Wales=100

	African		Indian	
	Males	Females	Males	Females
Hypertensive disease	534	870	182	196
Ischaemic heart disease	56	—	120	163
Cerebrovascular disease	256	178	67	119

black African origin. Immigrants from Commonwealth African countries include people of African of Asian/Indian and of European origin. A distinction between these 3 was made by classifying names on death certificates of African-born migrants. Table 3 shows proportional mortality ratios (i.e. the proportion of all deaths resulting from a given cause, standardized for age). The very high rates of mortality from hypertensive disease and stroke are prominent among the Africans, and high rates of IHD among the Indians.

These figures are similar to findings from the U.S.A. and the West Indies that people of African origin have high rates of hypertension-related disease. This appears not to be the case for Africa, which suggests that it cannot be explained simply on a genetic basis. Dramatic figures such as these show where we should be looking for causes of blood pressure-related diseases.