Survival by type of diabetes. Values are numbers (percentages)

Survival status	Type of diabetes: Non-insulin dependent	Insulin dependent	Total
	All patients		
Censored	326 (60)	253 (71)	579
Dead	218 (40)	105 (29)	323
Total	544 (100)	358 (100)	902
	Patients aged ≤40		
Censored	15 (100)	129 (99)	144
Dead	0	1 (1)	1
Total	15 (100)	130 (100)	145
	Patients aged >40		
Censored	311 (59)	124 (54)	435
Dead	218 (41)	104 (46)	322
Total	529 (100)	228 (100)	757

insulin dependent diabetes died compared with 40% of the patients with non-insulin dependent diabetes. However, non-insulin dependent diabetes usually develops only after the age of 40.[5] Hence, when the diabetic patients are split into two groups (those aged ≤40 and those aged >40), it is found that in both groups a smaller proportion of patients with non-insulin dependent diabetes died compared with patients with insulin dependent diabetes.

Comment

All three examples incorporate the arbitrary dichotomisation of continuous variables. However, adjustment can be made by keeping the variables continuous. For the Poole diabetic cohort, a Cox proportional hazards survival model with just type of diabetes indicates that insulin dependent diabetes gives a significantly better prognosis for survival than non-insulin dependent diabetes (relative risk 0·69 (95% confidence interval 0·54 to 0·87)). However, correcting for age (by entering it concurrently into the model with type of diabetes) switches this risk so that the risk for insulin dependent diabetes is greater than for non-insulin dependent diabetes (relative risk 1·15 (0·91 to 1·46)).

Thus, a problem arises when the variable of interest is expected to be confounded with another factor (such as type of diabetes and age) or when there is an important imbalance of a factor at the different levels of the variable of interest (such as an imbalance in the proportion of the sexes on two treatments). To accommodate this, the factor should also be included in a multiple regression or multiple logistic regression model together with the variable of interest or as a covariate in an analysis of variance.

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Deprivation and mortality in Glasgow: changes from 1980 to 1992

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See editorials by Davey Smith and Judge and pp 1465, 1470, 1475, 1487

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Social class differentials in mortality in Britain increased between the early 1970s and early 1980s,[1] and various indicators of increasing social polarisation since 1980 suggest that these mortality differentials will have widened further.[2] Further widening is supported by analyses of area based mortality in the north of England which show that the differences in mortality between the most deprived and most affluent areas increased greatly between 1981 and 1991.[3] Preliminary analyses from Glasgow showed a similar picture.[4] We report the trends in socioeconomic mortality differentials in Greater Glasgow from 1980 to 1992.

Methods and results

Numbers of deaths by sex and 10 year age band were available for 1980-82 and 1990-92 for people aged 15-64 residing in the area covered by the Greater Glasgow Health Board. Using the 1981 and 1991 census populations for Greater Glasgow as denominators we calculated standardised mortality ratios and confidence intervals. The standardised mortality ratio for the whole of Glasgow in 1980-82 was taken as 100.

We assigned postcode sectors in Greater Glasgow to eight categories (neighbourhood types[4]) on the basis of a cluster analysis of 30 area based sociodemographic variables from the 1981 census. The categories ranged from NT1 (most affluent) to NT8 (most deprived). The same neighbourhood type categories were used for 1980-82 and 1990-92. The variables used to assign neighbourhood type included all those used in the Carstairs deprivation index[5] and other variables that allow better discrimination within deprived areas. The high overall levels of deprivation in Glasgow result in other indices consigning large proportions of the population to the lowest categories, thus reducing their discriminatory power.

We combined NT1 and NT2 to produce the affluent areas—those with high owner occupation levels, high rates of single and multiple car ownership, and a high proportion of professionals and non-manual workers. NT7 and NT8 were combined to produce the deprived areas—those with high local authority accommodation, high unemployment rates, and mainly unskilled occupations among those working. The percentage of the population of Greater Glasgow aged 15-64 living in the affluent areas was 21·8% in 1981 and 25·2% in 1991. The percentage living in deprived areas was 26·4% in 1981 and 23·6% in 1991.

The standardised mortality ratios were considerably higher for the deprived than affluent areas for both sexes, for the two age bands analysed, and for both periods (table). The ratios of standardised mortality ratios between the deprived and affluent areas increased substantially between 1980-82 and 1990-92 for both sexes and for all age groups. As a common standard was used for the two periods the change in standardised mortality ratio over time reflects change in mortality over the 10 years. For men aged 15-44 in the deprived areas mortality increased by 9% (95% confidence interval −4% to 26%). For 15-64 year olds in affluent areas mortality fell substantially: by 18% (10% to 26%) for men and 22% (11% to 30%) for women. Considerably smaller falls were seen in the

*Standardised mortality ratios (95% confidence intervals) in least and most deprived areas of Greater Glasgow, 1980-82 and 1990-92**

Age	1980-82 Affluent	1980-82 Deprived	1980-82 Ratio deprived:affluent	1990-92 Affluent	1990-92 Deprived	1990-92 Ratio deprived:affluent
Men:						
15-44	57 (48 to 67)	148 (133 to 162)	2·58 (2·12 to 3·16)	49 (41 to 57)	161 (144 to 178)	3·29 (2·68 to 4·05)
45-64	61 (57 to 66)	123 (117 to 128)	2·01 (1·84 to 2·19)	49 (46 to 53)	114 (108 to 120)	2·31 (2·09 to 2·54)
15-64	60 (56 to 64)	126 (121 to 132)	2·09 (1·93 to 2·27)	49 (46 to 53)	121 (115 to 127)	2·46 (2·25 to 2·68)
Women:						
15-44	57 (45 to 69)	133 (114 to 152)	2·33 (1·79 to 3·06)	43 (33 to 53)	101 (84 to 118)	2·38 (1·77 to 3·22)
45-64	71 (65 to 78)	128 (121 to 136)	1·80 (1·61 to 2·00)	56 (51 to 62)	129 (120 to 138)	2·29 (2·03 to 2·58)
15-64	69 (63 to 74)	129 (122 to 136)	1·87 (1·69 to 2·07)	54 (49 to 59)	124 (116 to 132)	2·31 (2·07 to 2·58)

* Both periods have been standardised to Greater Glasgow = 100 in 1980-82

deprived areas: 4% (2% to 10%) for men and 4% (- 5% to 11%) for women.

Analyses (not shown) of deaths during 1985-87 with means of 1981 and 1991 census data as denominators show that the wider mortality differentials in 1990-92 compared with 1980-82 are part of a continuing trend over the decade which is showing no signs of decreasing.

Comment

In Glasgow, as in the north of England,[3] socioeconomic mortality differentials have recently increased. Populations in deprived areas have experienced only small falls in mortality, and mortality may have increased in young men and older women. In affluent areas, however, mortality has decreased steadily. The increasing differences in mortality coincide with sharp increases in inequalities in income.[2] The challenge remains to determine whether directly addressing material inequalities through broad social policy could ameliorate this unacceptable iniquity.

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Survey of fulfilment of criteria for authorship in published medical research

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The criteria for authorship of the International Committee of Medical Journal Editors, quoted in the instructions to authors in the *BMJ*,[1] are "substantial contributions to (*a*) conception and design, or analysis and interpretation of data; and to (*b*) drafting the article or revising it critically for important intellectual content; and on (*c*) final approval of the version to be published. Conditions (*a*), (*b*), and (*c*) must all be met." In an American study of 200 papers published in or before 1989 one quarter of authors did not contribute substantially.[2]

Methods and results

I sent a questionnaire to the first authors of all research papers that had three or seven or more authors and were published in five consecutive issues of a peer reviewed general medical journal in 1993. The questionnaire listed 16 types of contribution towards setting up a study and submitting the results for publication without indicating their importance in satisfying the international criteria for authorship; it asked the first author to tick what each of the coauthors had contributed and assured confidentiality. The table shows the contributions and whether they fulfil the criteria.

Twelve out of 14 questionnaires were returned. Only two first authors indicated that they were not concerned about confidentiality. The 12 papers had 92 authors. I excluded all but the first author on one paper with nine authors because they were all listed as having made almost all the contributions. Of 84 authors, therefore, 32 fulfilled the criteria for authorship and 19 possibly did so (51, 61% (95% confidence interval 50% to 71%)). After I had excluded another paper on a large multicentre trial 44 out of 69 authors satisfied possible and definite criteria for authorship (64% (52% to 75%)).

Contributions to study and its publication listed in questionnaire and whether they satisfy criteria for authorship

Contribution	Fulfilment of criteria for authorship
Original idea for study	Yes
Design of study	Yes
Obtained grant	No
Head of department	No
Referred patients to study	No
Examined patients	No
Collected samples or specimens	No
Supervised collection of data	Possibly
Gave technical help with data	No
Analysed data	Possibly
Gave statistical help	No
Wrote first draft	Yes
Wrote later draft(s)	Yes
Gave technical help with presentation	No
Approved final draft	Yes

For the 84 authors, the median number of contributions attributed to first authors was 10 (range 5-13), to second authors 3 (1-10), to third authors 3 (1-7), and to subsequent authors (excluding the last) 2·5 (1-6). Last authors scored 4 (2-6). The final version was approved by all authors in only five papers. Six heads of department were authors without fulfilling any of the definite criteria.

Comment

About one third of authors in this small survey had not made "substantial contributions" to the intellectual content of the papers. This fraction might have been larger if the possible criteria had been more specific—for example, analysing data may just have been simple manipulation on a computer. I cannot comment on the validity of the responses except for the paper I excluded because all authors had been listed as making nearly all the contributions, but I did promise confidentiality.

Those who win grants, head departments, refer patients, measure variables, and apply standard statistical tests are important in science, but they should receive credit for what they have done and no more.[3] A recent editorial asked if academic institutions are corrupt.[4] An institution cannot be corrupt; only people can be corrupt. But the way an institution works can be corrupting. The current lax view of authorship is corrupting, and it is "a fiction that authorship is synonymous with authorship listings."[4]

The results of this small survey on papers published in 1993 are much the same as those of the American study (published after my data had been analysed)[2]; authors seem no more aware of conditions for authorship now than four years ago. Journals should ask authors to fill in a questionnaire similar to the one I used and provide a published table of contributions to the paper.[5]

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