

Age	1980-82			1990-92		
	Affluent	Deprived	Ratio deprived:affluent	Affluent	Deprived	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.

Survey of fulfilment of criteria for authorship in published medical research

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See editorial by Smith

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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

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%)).

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.

- 1 Davey Smith G, Bartley M, Blane D. The Black report on socioeconomic inequalities in health 10 years on. *BMJ* 1990;301:373-7.
- 2 Davey Smith G, Egger M. Socioeconomic differentials in wealth and health: the legacy of the Thatcher years. *BMJ* 1993;307:1085-6.
- 3 Phillimore P, Beattie A, Townsend P. Widening inequality of health in northern England, 1981-91. *BMJ* 1994;308:1125-8.
- 4 Forwell G. *The annual report of the director of public health, 1990*. Glasgow: Greater Glasgow Health Board, 1991.
- 5 Carstairs V, Morris R. *Deprivation and health in Scotland*. Aberdeen: Aberdeen University Press, 1991.

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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); 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

- 1 Instructions to authors. *BMJ* 1994;308:39-42.
- 2 Shapiro DW, Wenger NS, Shapiro MF. The contributions of authors to multi-authored biomedical research papers. *JAMA* 1994;271:438-42.
- 3 Fotion N, Conrad CC. Authorship and other credits. *Ann Intern Med* 1984;100:592-4.
- 4 Are academic institutions corrupt? [Editorial] *Lancet* 1993;342:315-6.
- 5 Mould SM. Analysis of authorship. *BMJ* 1986;292:1017.

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