2.5 (2.0 to 3.1), and for subjects with a severe cognitive impairment (score 0-18 points, n=180) the risk was 2.8 (2.3 to 3.4).

The association of scores in the mini-mental state examination and mortality is further illustrated in the figure representing the survival probabilities of subjects, calculated from the age of 86 years onwards.

Comment

In contrast with general belief, borderline scores in the mini-mental state examination cannot be considered to be normal and are associated with a significant decreased survival. Subjects with mild cognitive impairment may further deteriorate in cognitive function,⁵ which is again associated with a lower survival.

It is not likely that all observed excess mortality is due to an effect of mild cognitive impairment. It may well be that milder cognitive impairments are associated with physical illness and disabilities, which could by themselves account for the decreased survival. A typical example is that atherosclerosis underlies decline of cognition, as well as cardiovascular disease. It is therefore difficult to determine which part of the

observed mortality is due to atherosclerosis and which part to the mild impaired cognition.

Nevertheless borderline scores in the mini-mental state examination discriminate subjects with a higher risk of mortality. In practice, this easy to administer questionnaire seems to be useful as a screening instrument for mild cognitive impairment, and its scores may act as an important predictor of survival in very elderly people.

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Foot morbidity and exposure to chiropody: population based study

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Although one third of pensioners receive chiropody care, the NHS gives low priority to foot problems. Health economic assessment suggests that the cost effectiveness of chiropody surpasses other interventions.¹ While rationing of chiropody is well documented,² it is unknown whether delivery of service is targeted to those in greatest need. We investigated whether the extent of foot morbidity is a predictor of receipt of chiropody and whether chiropody is needs led or distributed according to less appropriate determinants.

Subjects, methods, and results

A random sample of 792 subjects aged 60 years and over from South Glamorgan Health Authority's register were contacted in 1988-91.³ Information about chiropody in the preceding 12 months was obtained, and their feet were examined for toe deformities (hallux valgus and lesser toe deformities), corns and callosities, ingrowing toenails, and toenail thickening. A foot morbidity index (index 1, range 0-5) was constructed with one point scored for each problem present (on either foot).

The analysis entailed modelling the impact of this index and of possible confounding variables on a binary outcome variable denoting receipt of chiropody care in the past year. Because a negative finding might be due to the effectiveness of care in remedying treatable conditions, a second index (index 2, range

0-2) including only bony disorders which chiropody care cannot correct was also modelled. Logistic regression was performed with spss for Windows.

In total 71% (560/792) of subjects responded (mean age 71.2), with no difference in age or sex composition between responders and the original population. The mean foot index scores were 2.5 (index 1) and 1.1 (index 2). Three or more foot problems were found in 53% (291/553), though only 33% (182/559) had received chiropody within the previous year.

Before adjustment the probability of receiving chiropody was higher among women, older subjects, those living alone, and those with more foot problems (table). There was no significant difference across social classes. Adjustment produced two important changes: both indices of foot problems ceased to be significantly associated, due mainly to adjustment for age; and subjects who lived alone become significantly less likely to receive chiropody, owing mainly to adjustment for age and sex.

Comment

Two fifths of those assessed as needing chiropody care do not receive it.¹ The gap in care is filled by spouses or children. The informal criteria that are used to determine how this service is rationed are unknown. This study indicates that foot morbidity—unlike demographic (age, sex) and social factors (whether subjects live alone)—is not an independent determinant of

receipt of care. Differential non-response is unlikely to account for these findings. Patient function was not assessed in this study for reasons of time and because of the multifactorial origins of reduced function.

The critical importance of controlling for confounding is underlined by the reversal, after adjustment, of the direction of the association with living alone. Previous unadjusted studies reporting that living alone is associated with an increased chance of receiving chiropody⁴ are probably biased by uncontrolled confounding. Though use of many other health services is greater among those who live alone, this might not apply to a low status service like chiropody. Poor access to transport by car in this group provides a possible mechanism. Proposals that domiciliary chiropody be reduced with increased centralised provision carry a risk of further exacerbating this problem.⁵ This mismatch between the capacity to benefit from care and the pattern of provision of that care affects a number of common but low status health problems. Careful consideration should be given in the purchasing process to ways of identifying those with severe foot morbidity and of providing accessible services.

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Factors predicting contact with chiropodist in preceding 12 months: unadjusted and adjusted odds ratios (based on logistic regression analysis)

Variable	Unadjusted odds ratio (95% CI)	P value	Adjusted odds ratio (95% CI)*	P value
Age:				
1 year increase	1.09 (1.06 to 1.12)	<0.00001	1.09 (1.06 to 1.12)	<0.00001
Sex:				
Male	1.0	< 0.0001	1.0	<0.00001
Female	2.6 (1.8 to 3.8)		2.8 (1.8 to 4.4)	
Social class:				
I	1.0	0.21	1.0	0.60
II	1.0 (0.4 to 2.1)		1.1 (0.5 to 2.5)	
III non-manual	1.5 (0.7 to 3.3)		1.6 (0.7 to 3.8)	
III manual	1.3 (0.6 to 2.7)		1.5 (0.7 to 3.4)	
IV	0.8 (0.4 to 1.9)		1.1 (0.4 to 2.6)	
V	2.0 (0.7 to 5.3)		1.6 (0.5 to 4.9)	
Postcode area:				
Other	1.0	0.48	1.0	0.37
Inner city	1.2 (0.8 to 1.8)		1.3 (0.8 to 2.1)	
Marital status:				
Married	1.0	0.00001	1.0	0.41
Divorced or separated	0.8 (0.2 to 2.7)		1.4 (0.7 to 3.8)	
Widowed	2.4 (1.6 to 3.5)		1.6 (0.9 to 3.1)	
Single	2.5 (1.2 to 5.1)		1.8 (0.8 to 4.3)	
Living alone:				
No	1.0	0.04	1.0	0.03
Yes	1.5 (1.0 to 2.2)		0.5 (0.27 to 0.95)	
Foot problems on examination index 1:				
0	1.0	0.02	1.0	0.73
1	0.9 (0.3 to 2.9)		0.8 (0.2 to 2.8)	
2	0.8 (0.3 to 2.4)		0.5 (0.2 to 1.7)	
3	1.7 (0.6 to 4.9)		0.8 (0.2 to 2.4)	
4	1.5 (0.5 to 4.5)		0.6 (0.2 to 2.1)	
5	2.3 (0.5 to 9.7)		0.8 (0.2 to 3.9)	
Foot problems on examination index 2:				
0	1.0	0.006	1.0	0.68
1	1.0 (0.6 to 1.7)		0.8 (0.5 to 1.3)	
2	1.8 (1.1 to 3.0)		0.9 (0.5 to 1.6)†	

*Controlling for all other variables except foot problem index 2, unless otherwise stated.

†Controlling for all other variables except foot problem index 1.

Mortality related to cold weather in elderly people in southeast England, 1979-94

G C Donaldson, W R Keatinge

During the two decades up to 1977 the decreasing excess mortality in winter in England was due largely to the decline in winter epidemics of influenza.^{1 2} We describe subsequent reductions in excess winter mortality.

Methods and results

We analysed the number of deaths of men and women aged 65-74 years in greater London, Hertfordshire, Essex, Kent, Sussex, Hampshire, Surrey, Berkshire, Oxfordshire, Buckinghamshire, and Bedfordshire. This age group was old enough to have substantial mortality, but with less multiple disease than people aged over 74 years, and the use of a restricted age group avoided the need for questionable adjustments for changing age structure. We used the codes of ICD-9

(international classification of diseases, ninth edition) for mortality from ischaemic heart disease (410.0-414.9), cerebrovascular disease (430.0-438.9), respiratory disease (460.0-519.9), and all causes (0-999.9). A mean of 35.3 (SD 8.9) deaths occurred daily from ischaemic heart disease, 12.3 (5.9) from cerebrovascular disease, 11.2 (4.2) from respiratory disease, and 121.1 (21.3) from all causes. The number of deaths per day per million population aged 65-74 was computed from estimates of the daily population, obtained by linear interextrapolation from the 1981 and 1991 censuses, with adjustments for changed coding instructions in 1979 and 1984. Mid-year populations were 1 580 000 in 1977 and 1 420 000 in 1994. Measurements every three hours from the weather centre in central London provided mean daily temperatures.

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