

aided the suicide of an incurably ill person the patients have had a strong personality and sense of autonomy—and so may not be typical.

Dr Ottosson warned that handicapped people may feel troublesome and may express the wish to die because they feel that relatives should not continue to be inconvenienced. If there was a general loosening of restraints an attitude of callousness and hopelessness could spread, nursing care would suffer, and “omnipotent colleagues” might allow economic considerations or the interests of relatives to become overriding.

An examination of euthanasia in the United Kingdom is overdue. It is 15 years since the BMA published its last inquiry.<sup>3</sup> Unlike Dutch doctors, British doctors have not forced this dilemma into the open—there has been only one prosecution of a British doctor since the last report. In a survey in 1985 sponsored by the British Voluntary Euthanasia Society almost three quarters of a sample of the general public agreed that “the law should allow adults to receive medical help to an immediate peaceful death if they suffer from an incurable physical illness that is intolerable to them.” Only 15% of doctors agreed. The 1986 annual representative meeting of the British Medical Association urged the association to reconsider its policy that euthanasia “cannot be accepted by the medical profession.”<sup>3</sup>

To what extent will the newly formed BMA ethical committee on euthanasia, chaired by Sir Henry Yellowlees, be able to balance the seemingly conflicting demands of respect for the autonomy of the individual and maintenance of the corporate sense that it is morally wrong to kill?

JANE DAWSON

Technical Editor,  
*British Heart Journal*,  
London WC2H 4JR

1 Humphry D, Wickett A. *The right to die—understanding euthanasia*. London: Bodley Head, 1986.

2 Rallin B. *Last wish*. London: Viking, 1986.

3 British Medical Association. *The problem of euthanasia*. London: BMA, 1971.

## Use of the general health questionnaire in clinical work

Questionnaires have been used many times to detect psychiatric illness in general medical settings, with most studies emphasising that a substantial proportion of people shown to have a psychiatric illness using a research interview had not always been thought to be “cases” by the clinicians who were providing care.<sup>1-3</sup>

The temptation for clinicians is to use screening questionnaires in too simplistic a way, assuming that those with scores above some arbitrary threshold are psychiatric cases and those below are not. Unfortunately this cannot be done, nor can one assume that the proportion of people with high scores is the same as the probable prevalence of disorder in a particular population. Those who wish to use the general health questionnaire to detect the hidden psychiatric morbidity of medical practice<sup>4</sup> face rather different problems from those who wish to use the questionnaire for research.

The positive predictive value of a test is the probability that those with scores above the threshold will be thought to be cases. This value will be around 50% for those who score at the threshold, but the predictive value rises with increasing

score. Furthermore, the threshold score will be affected by the degree of physical illness of the particular patients—for example, with the general health questionnaire-28 the best threshold is 4/5 with patients attending general practitioners,<sup>5</sup> but it must be raised to 11/12 for inpatients on neurological wards.<sup>6</sup> Even if the threshold is known for the particular patients being studied, many “cases” will score below the threshold, just as many of those with scores above it will not be thought to have any important psychiatric illness.

When a patient is found to have a high score the most natural response by the clinician is to look at the questionnaire with the patient and ask additional probe questions suggested by particular symptoms. Most of the false positive results will be found in those patients experiencing transient disorders which are likely to remit spontaneously, but they will not have been harmed by having discussed their symptoms with their doctor. If there seem to be more false positives than true positives the threshold for discussing symptoms with the patient may be raised—but it may seem more sensible to examine the completed general health questionnaire in each patient and to discuss any symptoms which cannot be explained by the known physical pathology. For example, a patient with bronchopneumonia may get a high score by endorsing several symptoms dealing with physical malaise and social dysfunction (the A and C scales of the general health questionnaire-28): if, however, they score highly on the depression subscale (D scale) as well, these symptoms should be discussed to establish their severity and duration. The disorders uncovered by the general health questionnaire are similar in type to those which the clinician already knows about: most patients will not require specialist referral, but many will require chemotherapy or social intervention—and all are likely to benefit from discussion.

The researcher, by contrast, typically wishes to predict the level of psychiatric illness in a particular population from a knowledge of the proportion with scores above some arbitrary threshold.<sup>7</sup> He does not share the clinician's interest in the positive predictive value of the test, since he recognises that this is not an immutable characteristic of a particular screening test but is in fact highly dependent on the prevalence of disorder in the population being considered. However, he can predict prevalence provided that estimates of sensitivity and specificity are available for a comparable population.<sup>8</sup>

The estimate of prevalence will depend on the criterion for “caseness” used in the particular validity study cited: generally speaking, the most conservative estimate will be that using the PSE-ID-Catego method<sup>9</sup> and the most inclusive that using the clinical interview schedule,<sup>10</sup> with the newer DSM-III-R method being intermediate.<sup>11</sup> The various methods give different results because each uses somewhat different criteria for caseness, especially with regard to the length of time that symptoms must be present in order for the patient to be counted as a case. Those wishing to carry out their own validity study need to be aware of some pitfalls for the unwary.

If the population for study has a high prevalence (over 40%) of psychiatric disorder then the simplest design of a validity study is to interview a random sample of perhaps 60 patients. Sensitivity and specificity are then calculated for each possible threshold of the general health questionnaire, and the resultant set of values drawn as an “ROC curve.”<sup>12-14</sup> The concept of a “relative operating characteristic” (ROC) is derived from signal detection theory and is being increasingly used in the assessment of screening procedures in medicine. The area under the ROC curve can be used to compare the

relative efficacy of two screening procedures, and the curve provides a rational estimate of the threshold to be used in a given setting since one can see the best trade off between sensitivity and specificity. This threshold is then used to calculate the predicted prevalence of disorder and positive and negative predictive values.

It is necessary to use a stratified sampling strategy only if the prevalence of disorder is below 40%, to avoid spending too much time interviewing non-cases. If this is done, however, it is essential to weight the data back to the original sample of consecutive subjects; otherwise the estimate of specificity will be too low and the estimate of sensitivity will be too high.

It is advisable to calculate an ROC curve to check that the threshold chosen is appropriate: in medical and neurological inpatients, for example, the threshold may have to be raised as high as 9/10 on the general health questionnaire-28 to take account of symptoms and social dysfunction produced by medical illness.

DAVID GOLDBERG

Professor of Psychiatry,  
University of Manchester,  
Withington Hospital,  
Manchester M20 8LR

- 1 Nabarro J. Unrecognised psychiatric illness in medical patients. *Br Med J* 1984;289:635-6.
- 2 Goldberg D. The recognition of psychiatric illness by non-psychiatrists. *Aust N Z J Psychiatry* 1984;18:128-34.
- 3 Vazquez-Barquero JL, Padierna Acero JA, Pena Martin C, Ochoteco A. The psychiatric correlates of coronary pathology: validity of the GHQ-60 as a screening instrument. *Psychol Med* 1985;15:597-608.
- 4 Goldberg D, Blackwell B. Psychiatric illness in general practice. *Br Med J* 1970;ii:439-43.
- 5 Goldberg D. *Manual of the general health questionnaire*. Windsor: NFER, 1978.
- 6 Bridges K, Goldberg D. Psychiatric illness in patients with neurological disorders. *Br Med J* 1984;288:268-71.
- 7 Goldberg D. Estimating the prevalence of a disorder from the results of a screening test. In: Wing JK, Bebington P, Robins L, eds. *What is a case?* London: Grant McIntyre, 1981:129-36.
- 8 Goldberg D. Identifying psychiatric illness among general medical patients. *Br Med J* 1985;291:161-2.
- 9 Wing JK, Mann SA, Leff JT, Nixon JN. The concept of a case in population studies. *Psychol Med* 1978;8:203-19.
- 10 Goldberg DP, Cooper AB, Eastwood MR, Kedward HB, Shepherd M. A psychiatric interview suitable for use in community surveys. *British Journal of Preventive and Social Medicine* 1970;24:18-26.
- 11 American Psychiatric Association. *Diagnostic and statistical manual-III-R*. Washington: American Psychiatric Association, 1985.
- 12 Metz CE. Basic principles of ROC analysis. *Semin Nucl Med* 1978;8:283-98.
- 13 Hanley JA, McNeil BJ. The meaning and use of the area under the ROC curve. *Radiology* 1982;143:29-36.
- 14 Mari JJ, Williams P. A comparison of the validity of two psychiatric screening questionnaires in Brazil using ROC analysis. *Psychol Med* 1985;15:651-9.

## Subnutrition in the elderly

Because of widespread concern about the poor nutritional state of some elderly people several large community studies were done in the 1960s and 1970s; these showed that most elderly people had an adequate diet.<sup>1,6</sup> About 1-2% of those surveyed were, however, suffering from serious subnutrition. This means about 200 000 people in Britain, and doctors need to know how to identify subnutrition and which groups are most at risk.

Most at risk are people with severe mental or physical incapacity. Social isolation is a risk factor only if compounded by ill health, and, indeed, old women living alone eat rather better than those living with others.<sup>6</sup> Poverty does not appear to be a factor, though old people on low incomes may have to choose between feeding and heating themselves. Ignorance over entitlement to supplementary benefits is often at the root of this difficulty.

Identifying subnutrition is difficult. Accurate information on dietary intake requires a skilled dietitian and a cooperative subject who is prepared to weigh her intake of foodstuffs over a whole week. There are various shortcuts in which the

dietitian uses a questionnaire, but it is usually patients who are most at risk who are least able to provide the necessary information. Doctors may thus have to resort to measuring the clinical and biochemical consequences of subnutrition, but these may present difficulties. Old people often exhibit classical signs of nutrient deficiency (angular stomatitis, glossitis, or peripheral oedema), but these are usually the result of intercurrent illness.<sup>7</sup> Many old people have low serum vitamin concentrations,<sup>1,8,9</sup> but these simply reflect increased physiological and biochemical variation in old age—for example, low riboflavin or calciferol (25-hydroxycholecalciferol) concentrations are not necessarily associated with clinical abnormalities.<sup>1,10</sup>

Attempts have recently been made to produce order out of chaos by standardising anthropometric and biochemical data in the elderly and resting their reliability in distinguishing between normality and subnutrition.<sup>11-13</sup> Easily measured and calculated values such as the triceps skinfold thickness, arm muscle area, and corrected arm muscle area are useful in assessing nutritional state. Serum albumin and prealbumin concentrations may also help, though in some groups acute illness seems to be more important than dietary deficiency in reducing these.<sup>13</sup>

Even if subnutrition can be identified there is uncertainty as to its effect on the health of old people—for example, vitamin D deficiency may cause a proximal myopathy, but calciferol supplements do not seem to improve mobility in most old people with low serum calciferol concentrations.<sup>14</sup> Folic acid deficiency may cause mental impairment and folate concentrations are often low in patients with dementia—yet folate supplements are of little benefit in most of them.<sup>15</sup> Nutrient correction may, however, be of considerable value: ascorbic acid accelerates the healing of surgical wounds and pressure sores while calciferol is vital for frank osteomalacia.<sup>16,17</sup>

Clinical and biochemical indices of subnutrition are associated with acute illness and an increased mortality,<sup>18</sup> but are they cause or effect? Stress pushes old people into negative nitrogen balance, while acute infections alter the ratio of buffy coat to plasma ascorbic acid.<sup>19</sup>

Since only a minority of old people suffer from subnutrition, the first step is to identify those at risk. This is the task for the primary care team supported wherever possible by a health visitor or geriatric visitor. Thereafter the dietitian may have a part to play in providing advice and designing and distributing booklets.<sup>20</sup> This is most easily organised in day centres, lunch clubs, and day hospitals.

The time honoured system for supplementing the diet of an elderly patient is to organise a meals on wheels service, but are these effective? Individual meals will appreciably improve the diet only if served at least four times a week, and there are also problems such as loss of nutrient value during distribution and ensuring that meals are actually eaten.<sup>21</sup> Meals served at luncheon clubs, day centres, and day hospitals are more likely to be effective because they are eaten with others. Relatives should also be given advice from a dietitian or health visitor on specific nutritional problems that arise.

The use of nutrient supplements is controversial. There is little evidence that their routine use is of much value in the elderly, but individuals with specific problems may be helped—for example, patients with biochemical evidence of osteomalacia should be given calciferol (as a large single parenteral or oral dose once every six months<sup>10,22</sup>). The injection of B complex vitamins may be useful in managing confusional states in acute illness or after a proximal fracture