

Social and economic factors in the nutrition of the elderly

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Following the pioneer work of Dr Marjory Warren in 1935, the speciality of geriatric medicine has evolved during the last 25 years. Research has recently gained momentum and, now that there are more than 10 million people aged 60 years and over in the UK (Central Statistics Office, 1970) and 2.5 million over the age of 75 years, we need to know more about the ageing process and the problems of living in later life.

There have been few surveys of health and nutrition in the elderly and a proportion of these have examined only particular nutrients. There is limited information about the effect of social and economic factors on the health and nutrition of elderly people and the current trend of economic inflation makes it impossible to provide accurate up-to-date details.

The 19th century

Barker, Oddy & Yudkin (1970) refer to the analysis by modern techniques of a small survey by William Nield, Mayor of Manchester, in 1841, and they note that: (a) families whose incomes were reduced by unemployment did not switch from meat to bread, but reduced consumption all round; and (b) there was little difference between meat consumption by the poorest classes in 1841 and the 1930s.

They also analysed the 1862-3 dietary surveys of Dr Edward Smith and, comparing the data with current information, they comment that: (a) people will not eat enough to satisfy their true energy needs if the diet does not contain adequate amounts of palatable and more expensive foods; and (b) during the last 100 years, the average intake of fat and calcium has increased, whereas the intake of iron has fallen.

The 20th century

Boyd-Orr (1936) startled the country when he showed that 50% of the population had intakes below the required standard of one or more nutrients and that the average diet of 10% of the population was inadequate, in all constituents which he assessed, to maintain health.

Food policies during and since the Second World War appear to have eliminated frank sub-nutrition in the UK, and the social and food survey of the elderly in Sheffield by Bransby & Osborne (1953) tended to confirm this achievement. Six subjects (2%) out of 303 people who were studied took less than 4200 kJ/d (1000 kcal/d), married couples fared better than their single counterparts, and size of

income, not age, influenced the amounts of different foods which were taken. Those who had small, unsupplemented incomes had little money left over after essential bills had been paid each week.

The last 10 years

Fowlie, Cohen & Anand (1963) showed a significant relationship between sub-nutrition and depression in the elderly and Busse (1969) suggests that the maintenance of good health allows the elderly to enjoy social activities which reduce the risk of depressive reactions.

Brockington & Lempert (1966) found that, in Stockport, elderly people who lived with relatives or other people had the best diets, widowers had the poorest diets, and that lunch clubs provided important supplements. Those whose income was only the retirement pension tended to have monotonous and tasteless diets.

Surveys which have demonstrated low levels of thiamin, folic acid, cyanocobalamin, vitamin C and Fe in certain groups of elderly people have been reviewed by Leeming, Webster & Dymock (1973) and Hyams (1973). Low levels tend to occur in those who are ill or have been in hospital or residential accommodation for more than 3 months. Platt, Eddy & Pellett (1963) showed that serious loss of nutrients occurred in the preparation and serving of meals in hospitals and no doubt similar problems occur in all large-scale catering. This may be of relevance to the meals-on-wheels service and lunch clubs.

The first longitudinal study of elderly people in the UK was reported by Stanton & Exton-Smith (1970). In 1962 they had assessed sixty women aged 70 to 94 years who lived alone in two London boroughs, and in 1969 they followed up twenty-two subjects. The majority of those who showed a marked decrease in protein and energy intake had shown a deterioration in health due to either reduction in physical activity or constitutional disturbance. The authors stressed the importance of home-helps for shopping, the value of meals-on-wheels and lunch clubs, and the need for dietary advice from health visitors or dietitians.

More recently, Exton-Smith, Stanton & Windsor (1972) have shown that intake of nutrients is highest in active elderly people, less in those who are housebound and intermediate for those who live in residential accommodation. However, despite alarmingly low levels of intake of certain nutrients (e.g. vitamin C and Fe), there was no clinical evidence of sub-nutrition and some subjects were noted to be obese.

The first multi-centre longitudinal survey

The first report by the Panel on Nutrition of the Elderly (Department of Health & Social Security, 1970) included information on studies of food intake, osteomalacia, osteoporosis and of deficiencies of Fe, folate, vitamins and protein. In addition, twenty-six consultant physicians in charge of established geriatric units had reported the incidence of primary and secondary sub-nutrition in approximately fifty admissions from home to each of the units. The Panel concluded that the number of under-nourished elderly people was probably small and that: 'overt

disease, not overt malnutrition, has brought his patients to the geriatrician's care.'

The Panel recommended further study and its report (Department of Health & Social Security, 1972) gives medical, biochemical, dietetic and socio-economic information about a random sample of 879 subjects over the age of 65 years from six centres; Angus, Cambridgeshire, Camden, Portsmouth, Rutherglen and Sunderland. The survey was carried out in 1967-8 and the survivors who could be traced were re-assessed in 1972-3. At the end of 1973 another multi-centre random sample will be examined and, if funds remain available, the survivors of both samples will subsequently be followed up.

In the 1967 survey, men over 75 years of age who lived alone had lower intakes of food and certain nutrients compared with men in that age group who lived with a spouse or with other relatives. Women below the age of 75 fared best of all, although women over 75 who lived alone also appeared to manage well.

Twenty-one people (2.5% of those whose diets were recorded) received meals-on-wheels compared with the figure of 1.7% for all persons aged 65 and over in England and Wales at that time. Meals were provided by relatives other than their spouses or by other helpers for 28% of men and 21% of women over 75, and 24% and 32% respectively were living with relatives other than their spouses. It is obvious that relatives play an important part in the care of the elderly at home. Census figures show that 20% or more of people over the age of 65 live alone and that 10% are house-bound. Thus a significant number of elderly people will be at risk if appropriate help is not available.

With regard to their income, the subjects were divided into three groups: Social Security pension only, those receiving Supplementary Benefit and those not receiving Supplementary Benefit but who had sources of income other than the Social Security pension. Those who had 'other sources of income' had higher average intakes of nutrients than those who received Supplementary Benefit although there was no significant energy restriction arising out of different incomes.

The amounts spent on food per person per week varied between under £1.49 and over £2, and there was a direct relationship between the amount spent on food and the energy and nutrient content of the diet. There was no apparent relationship between expenditure on food, advancing years and skinfold thickness. In Angus, many subjects with relatively low expenditures on food were still able to prepare tasty and nutritious meals and this probably reflects their early training.

Interpretation of energy and nutrient intakes according to social class may be unreliable, because retirement in conjunction with a reduced income can be a great levelling process.

Masticatory studies were carried out by D. J. Neill on fifty subjects living in Cambridgeshire who had participated in the main survey and of these, forty who were edentulous were wearing dentures. There was no significant increase in carbohydrate consumption or reduction in protein intake in those who had poor masticatory performance. Those who had inefficient dentures avoided certain foods and, although their diets may have been monotonous, and to some people unappetising, their nutrient intake was adequate.

The incidence of sub-nutrition in the survey

A clinical diagnosis of sub-nutrition was made in twenty-seven subjects (3% of the sample) and in twelve cases there was known significant disease or disability to account for the condition. Six subjects were classed as 'failure adequately to cope' by the dietitians and one woman appeared to be unreasonably restricted in her expenditure on food by her husband. In eight cases (less than 1%) there was no clear medical or social reason, and no doubt this group might have been helped by recognition of their situation and deployment of community services.

In the Angus sample of 100 subjects, we found one man and one woman who were taking inadequate diets and some 20% who had a problem which they had either not reported or which had not been detected, e.g. the need for a home help and the diagnosis of diabetes mellitus. This is in keeping with the findings of Williamson, Stokoe, Gray, Fisher, Smith, McGhee & Stephenson (1964) who found that 20% of elderly people in an Edinburgh sample failed, for various reasons, to report ill-health to their doctors. In some cases, the subjects incorrectly attributed their symptoms to the natural process of growing old.

Follow-up

The follow-up of survivors in the six centres was completed in June 1973 and all the data has yet to be analysed. In Angus we found sixty-nine out of the original 100 still to be alive, with only two in a long-stay geriatric unit and one in a Welfare Home. The remainder were at home, although one man was on holiday in Canada and at least two of the men were courting again. Our general impression was that the survivors were little changed in health, although some of the older people had reduced their degree of activity to some extent. If reduced physical activity is concomitant with reduced energy intake it remains to be shown which is the initiating factor.

The woman who had previously been taking an inadequate diet, but who had not looked undernourished, had since died in a mental hospital. The man who had been classed as taking a poor diet had been bereaved before the first survey and, in addition to his loneliness, he was obviously not domesticated. His nourishment had been derived mainly from tinned foods and vitamin B-enriched liquid refreshment. His habits had changed little during the 5-year interval and he continued to refuse meals-on-wheels and a lunch club. Despite an intervening stroke, he continued to live alone. He was still able to cope with a change of 'buses from his village to visit his sister 20 miles away, and to travel with the local butcher to nearby cattle markets almost every week.

Although these are anecdotal comments, they remind us of our uncertainty about the content of the ideal diet to maintain health and to provide adequate reserves for times of stress, and particularly acute illness, in the elderly.

Balancing the budget

Wedderburn (1973) points out that elderly people spend a higher percentage of

their total outlay on the basic necessities of food, fuel and housing than the average household: 53.3% compared with 45.1%. Any increase in the cost of living will therefore have a more adverse effect on the budget of the elderly person. Levels of expenditure on fuel as a separate item are not known, and any possible effect of insufficient heating in the home on eating habits requires further study.

The Social Security pension and Supplementary Benefits are now under regular review (Table 1) and an example of the weekly budget of a widower, aged 79, who lives in a sheltered housing scheme in Angus is shown in Table 2.

Table 1. *Weekly rates of UK old age pensions, £ per week*

Retirement pension:	Rate in	Rate in October 1973	
	1969		
Married couples	8.10	12.50	
Single persons	5.00	7.75	
		Claimant and wife under 80 years old	Claimant or wife over 80 years old
Supplementary pension:			
Married couples	8.35	12.85	13.10
Single householder	5.30	8.15	8.40
Other single person	4.35	6.60	6.85

Wedderburn (1973) also states that since 1948 the percentage of old people receiving supplementary pensions (or National Assistance) has fluctuated between 20 and 30%, yet about 10% who have entitlement to Supplementary Benefit are not receiving it. This may be due to a mixture of pride and ignorance or, until recent times, to inadequate publicity reaching the elderly themselves of the benefits which are available.

Some elderly people also have to deal with the problem of having out-lived their savings. Men aged 65 years live, on average, another 12 years and women aged 65 years, another 14 years. This means that they have to adapt their way of life to a drop in income on two occasions, the first time when they retire from work and the second time when they are much older and perhaps frailer and so less able to cope.

The opinion of a recent conference of elderly people organised by the County of Angus Old People's Voluntary Welfare Committee was that they would wish to retain their dignity by paying standard prices. They said that the introduction of rent rebates and concessionary bus fares implied that the basic pension was inadequate.

Conclusion

There is little evidence that elderly people suffer primary sub-nutrition because of lack of funds.

Sub-nutrition in the elderly is usually one facet of the multiple pathology which characterizes the elderly patient.

The elderly person who has acquired good dietary habits and the ability to balance a budget is likely to enjoy good health in later life. Those who have minimum incomes, however, will have little financial reserve for other than the basic necessities for living.

Table 2. *Specimen budget for a man, aged 79, a widower for 17 years, living in sheltered housing, for 1 week in October 1973*

Income:		£	
	Pension	7.75	
	Superannuation	2.25	
	Supplementary	1.70	
		<hr/>	
		£11.70	
		<hr/>	
Expenditure:		£	
	Rent	1.84	(66p rebate)
	Electricity	1.20	(average over the year)
	Food	4.00	
	Tobacco	0.46	
	Alcohol	0.20	
	Laundry	0.33	
	TV rent and licence	0.62	
	Newspapers	0.40	
		<hr/>	
		£9.05	
		<hr/>	
Other commitments (Bus fares, household articles, clothes, etc.)		£2.65	
		<hr/>	
Food:		£	
	$\frac{1}{2}$ lb stewing steak	0.32	
	$\frac{1}{4}$ lb sausages	0.10	
	$\frac{1}{4}$ lb bacon	0.15	
	$\frac{1}{2}$ lb fish	0.25	
	$\frac{1}{2}$ lb cheese	0.18	
	3 eggs	0.10	
	$3\frac{1}{2}$ pints milk	0.21	
	Apples	0.20	
	Oranges	0.20	
	Vegetables	0.50	
	Meals on Wheels (soup and pudding)	0.05	
	Salvation Army, three course lunch	0.20	
	Bread, butter, tea, cereals, etc.	1.54	
		<hr/>	
		£4.00	
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Summary

1. Surveys of the elderly have revealed little primary sub-nutrition due to lack of funds.

2. Those who have minimum incomes have to rely on cheaper foods which, although not necessarily of lower nutritional value, tend to produce a monotonous diet. They are also more vulnerable to rapid increases in food prices and will have little financial reserve for other than the basic necessities of living.

3. Poverty may occur if there is undue pride or ignorance of the financial help which is available.
4. Food fads and inherited faulty dietary advice may lead to poor nutrition.
5. Men over the age of 75 and who live alone are the most likely to have poorer nutrition.
6. A poor state of dentition may not be related to poor nutrition but the diet is likely to be monotonous.
7. Sub-nutrition in the elderly is usually one facet of multiple pathology which includes physical and mental illness or disability, loneliness, social isolation and bereavement.
8. Relatives play an important part in caring for the elderly at home.
9. The ability of elderly people to maintain adequate standards of nutrition may be threatened by a drop in income at the time of retirement, and if they out-live their savings.
10. The number of 'preparation for retirement' courses should be increased, as should meals-on-wheels services and lunch clubs. More extensive use should be made of dietitians, health visitors, and social workers as members of community health teams, alongside general practitioners.

Dr S. E. Cohen carried out the dietary and socio-economic aspects of the Angus surveys, read the manuscript and, as spouse, has maintained the nutritional status of the author.

REFERENCES

- Barker, T. C., Oddy, D. J. & Yudkin, J. (1970). *The Dietary Surveys of Dr Edward Smith 1862-3* p. 10. London: Staples Press.
- Boyd-Orr, J. (1936). *Food, Health and Income*. London: Macmillan & Co.
- Bransby, E. R. & Osborne, B. (1953). *Br. J. Nutr.* **7**, 160.
- Brockington, F. & Lempert, S. M. (1966). *The Social Needs of the Over-Eighties: the Stockport Survey*. Manchester: Manchester University Press.
- Busse, E. W. (1969). *Proc. 8th Int. Congr. Geront.* Vol. 1, p. 195.
- Central Statistics Office (1970). *Report*. London: H.M. Stationery Office.
- Department of Health & Social Security (1970). *Rep. publ. Hlth med. Subj., Lond.* No. 123.
- Department of Health & Social Security (1972). *Rep. Hlth & Soc. Subj., Lond.* No. 3.
- Exton-Smith, A. N., Stanton, B. R. & Windsor, A. C. M. (1972). *Nutrition of Housebound Old People*. London: King Edward's Hospital Fund.
- Fowle, H. C., Cohen, C. & Anand, P. (1963). *Geront. Clin.* **5**, 215.
- Hyams, D. E. (1973). In *Textbook of Geriatric Medicine and Gerontology* p. 528 [J. C. Brocklehurst, editor]. Edinburgh: Churchill Livingstone.
- Leeming, J. T., Webster, S. P. G. & Dymock, J. W. (1973). In *Textbook of Geriatric Medicine and Gerontology* p. 321 [J. C. Brocklehurst, editor]. Edinburgh: Churchill Livingstone.
- Platt, B. S., Eddy, T. P. & Pellett, P. L. (1963). *Food in Hospitals*. Oxford: Oxford University Press.
- Stanton, B. R. & Exton-Smith, A. N. (1970). *A Longitudinal Study of the Dietary Requirements of Elderly Women*. London: King Edward's Hospital Fund.
- Wedderburn, D. (1973). In *Textbook of Geriatric Medicine and Gerontology* p. 692. [J. C. Brocklehurst, editor]. Edinburgh: Churchill Livingstone.
- Williamson, J., Stokoe, I. H., Gray, S., Fisher, M., Smith, A., McGhee, A. & Stephenson, E. (1964). *Lancet* **i**, 1117.