

# Trans-cultural Aspects of Nutrition in Old Age

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## **Trans-cultural studies of elderly people and the significance of cultural differences**

As long as records have been kept, some people have lived to a ripe old age in various cultures, but they formed only a small proportion of the population. During the past few decades, however, the decline in birth rates and in infant mortality, the control of communicable diseases, and improvements in nutrition and living standards have resulted in an increased life expectancy—in some countries more than others (Table I).

This phenomenon, which leads to an increase in both the numbers and the proportion of the elderly (especially in the numbers of the very old and frail), has created social, political and economic problems due to associated high risk of morbidity, disability and need for medical services.

In 1980, there were about 129 million elderly people (over 65 years) living in developed and developing countries. By the year 2000, the aged population in the developing world is expected to have increased by the order of 100 million, compared to 35 million in the more developed world (Table II) [1]. Among individual countries, the projected increases in the USSR and USA are dwarfed by those in China and India [2, 3].

Many fundamental questions arise from these observations, such as: are people living longer but with more morbidity/disability? If so, with what diseases and effects on lifestyle? What factors promote health in later life to allow a continued active role in society? Can these factors be delineated by studying elderly people in different countries? Once these factors

are identified, can they then be incorporated into national health policies so as to ensure that the younger members of the population also grow old 'gracefully'?

Fries [4] argued that a person can live a disease-free, fully autonomous life until 'natural' death from biological senescence. This concept implies that the population survival curve becomes progressively rectangular as causes of 'premature' mortality are eliminated, e.g. by personal moves to change lifestyle so as to delay the age of onset of chronic disease. People would therefore live to the limits determined by their biological endowment. Fries suggests limits from 82.4 to 85.6 years for life expectancy at birth—a figure which several developed countries such as Japan are rapidly approaching. The prospect of death occurring 'disease-free' only emphasizes the point that living out the life-span need not burden the health services.

Since 1900, the eradication of infectious diseases as major causes of death has exposed another group of diseases—the so-called diseases of affluence. A recent report from EURO-NUT [5] affirms that a major public-health problem facing many countries is the prevalence of the diseases of affluence, i.e. coronary heart disease, atherosclerosis, hypertension, diabetes mellitus, colorectal cancer, breast cancer, obesity, gallstones, diverticular disease, etc. These represent a primary cause of premature death, hospitalization and disability in our society, the cost of which in both economic and social terms is immense. These diseases disproportionately afflict older individuals. Nutrition (either in excess or in deficient amounts) and other life-style habits bear considerable responsibility for the prevalence of these diseases

Table I. Gains in life expectancy at age 60 years, between 1900 and 1978 [22]

Country	Men		Women	
	1900	Years gained by 1978	1900	Years gained by 1978
Sweden	16.1	1.7	17.2	4.8
Bulgaria	17.4	-1.2	17.5	1.1
USA	14.2	2.9	15.1	7.1
Australia	14.4	2.1	16.6	3.8
England	13.5	1.4	16.2	5.0
Japan	13.3	4.7	15.0	6.5
Italy	13.8	3.0	14.0	6.8
France	13.8	3.3	15.1	7.1
Germany	13.1	2.8	14.2	5.9
Switzerland	12.7	5.0	13.7	8.4

Table II. World population projections [2]

Year	Total population (millions)	Population 65 + years	% 65 + years
Developing countries			
1980	3284	129	3.9
2000	4297	229	4.7
Developed countries			
1980	1131	129	11.4
2000	1272	167	13.2

in our societies. The evidence from animal, clinical and population studies regarding the synergism of diet, life-style and diseases is now well established. However, the data on nutritional factors in the elderly are limited and often biased. They are usually either extrapolations from data on younger adults, or based on samples of elderly people in nursing homes or seen for medical problems. Conversely, metabolic studies usually employ only selected healthy elderly subjects [6].

Almost wholly lacking are representative

population data, especially on very old people whose numbers are rapidly increasing. To date, most studies on the elderly [1, 7] have been descriptive in nature with the purpose of providing information on the health and functional ability and their use of health services. Little information is available regarding the past and present food intake and life-style habits of elderly people in different countries and the relationship of such variables to longevity and health in later life. Such information is crucial for the development of national health policies for the populations at large so that their longer years can be spent in health, allowing a continued active role in society.

There is much to learn from studying different cultures. One of the most interesting and visible ways in which men and women express their cultural identity is through the food they eat or do not eat. What and how human populations eat depends on many factors, but most importantly on where people live. Food habits are fundamentally cultural habits; that is, the individual's cultural background and orientation, as well as his or her personal characteristics and perceptions, determine what his or her dietary patterns will be [8].

Foster [9] stated that 'society means people and culture means the behaviour of people' which behaviours are passed down from generation to generation. Freedman [10] argued that this sharing of experience enabled individuals and cultures to adapt to their natural environment and to begin the process of change and development in order to survive in that environment—this is known as 'cultural evolution'. Many cultures have survived for thousands of years, which means that they have evolved to the extent where they are in perfect harmony with their environment and have dietary and life-style practices conducive to good health.

So an important rationale for trans-cultural studies lies with trying to study food and life-style cultures that are as disparate from each other as possible because such differences may influence life expectancy and morbidity and mortality patterns in the elderly in different parts of the world. Information obtained could provide important clues about the determinants of health in later life.

Current dietary recommendations suggest that there is one certain way of eating which is healthy and desirable. Trans-cultural studies of this nature may indicate that there are a number of desirable food patterns conducive to good health, which interact with culture-specific life-style habits.

The IUNS committee on Nutrition and Ageing [11] and EURO-NUT [6], in conjunction with the WHO Global Programme for the elderly, have embarked on trans-cultural studies to discover nutritional and non-nutritional determinants of health in later life. The former will include both developing and developed countries which have disparate cultures and the latter will include mainly countries in Europe.

### Cultures for consideration

The key or prototype cultures can be categorized as follows:

*Occidental*, which would include western, eastern and northern Europe and the 'New World' countries like Australia and America;

*Oriental*, which would include Japan, China and other Asian countries;

*Middle Eastern*, e.g. Jordan, Israel, Turkey, Lebanon;

*Latin American and Caribbean*, e.g. Brazil, Mexico, Bahamas;

*African*;

*South Asian*, e.g. India, Pakistan, Sri Lanka;

*Hunter-gatherer, fishermen*, which would include Aboriginal Australians and American Indians.

In the New World countries, there is enormous cultural diversity owing to immigration. Studies of the elderly in these countries thus offer the opportunity to study many cultures under the 'same roof'.

### Biological performance of aged people in different cultures

To a large extent, increased longevity is a direct result of an improvement in the control of infectious diseases, particularly those contrib-

uting to early mortality. This improvement, which took place slowly in developed countries, is occurring more rapidly in many parts of the developing world (Africa, India). However, infectious and parasitic diseases, not to mention poverty and malnutrition, are still the major causes of death and are responsible for low life expectancies experienced by developing countries. In Europe in 1980, for every 100 persons aged 60-64 years, there were an estimated 55 persons aged over 80 years, but in Africa, for every 100 persons aged 60-64 years, there were only 15 persons aged 80 and over [2].

In the Occident, people aged 60-74 years currently constitute about 10-14%, with those aged 75 and over constituting about 4-7% of the population. Life expectancies at birth are about 70-75 for men and 78-80 for women. However, in the Soviet Block life expectancies are lower at 64 for the men and 73 for the women [13]. In the Orient, there are proportionally fewer elderly people, with about 6-8% aged 60-74 and only 1-3% of the population aged over 75 years. Life expectancies at birth range from about 60-70 years for men and 69-76 years for women. Japan however, has the longest life expectancy of the world at 75 years for men and 81 years for women. In Latin American countries there are fewer elderly people compared with North America, with about 4-9% aged 60-74 years and only 1-3% of the populations aged over 75 years. Life expectancies at birth range from 60-68 years for men and 66-73 years for women [13].

In Africa, India the Middle East, and in hunter-gatherer societies, the numbers of elderly people are also considerably lower, with only about 4-8% aged 60-74 and 0-2% of the population aged over 75 years. Life expectancies at birth in Africa and India range from about 48-54 years for men and 53-61 years for women. In the Middle East they range from 58-65 years for men and 60-69 years for women. In Israel however, the life expectancy is longer at 73 years for men and 77 years for women [13].

Observations over time of gains in life expectancy at birth have been used as an indicator of social progress. Gruenberg [12] argued that as the life span extends, more persons survive longer with chronic progressive diseases or 'diseases of affluence' (so common in the Occi-

dent), because antibiotics reduce the risk of death from pneumonia.

Studies of selected European and North American populations have shown that a fifth of those aged 65–74 and a third of those aged 75 and more have some degree of physical impairment. Of the oldest group, 10% may be severely disabled. In developed countries, 30–40% of the bed-days in acute hospitals are taken by the elderly and a similarly high percentage of the services of general practitioners. Three quarters of the deaths are attributed to cardiovascular disease and cancer, with ischaemic heart disease and malignant neoplasms accounting for about 25%. A further 14% are due to cerebrovascular disease [2].

Death rates from cardiovascular diseases have been falling over the past few years in some countries, e.g. Australia, Belgium and the USA, and, except for Eastern Europe, deaths from cerebrovascular diseases are also decreasing, although more slowly. Total mortality from neoplasms is on the increase in about half of the Occident or industrialised countries but falling in others. Where there is an increase, it is accounted for mainly by lung cancer in men and breast cancer in women [2].

In the Occident, for the 65–74 age group, there is considerable variation by country in the proportions of deaths attributable to the different causes. The greatest differences are in ischaemic heart disease with a three- to five-fold difference in the proportion of deaths from that cause. Deaths attributable to respiratory diseases vary from 12% of all deaths in England and Wales to 4.4% in Sweden.

The drop in cardiovascular and cancer mortality in successive cohorts in some countries is of course the major factor in recent increases in longevity. Of what then do the very old die? There is evidence from one careful Swedish study that an increasing proportion of this group, up to one-third, are dying of 'old age', with multiple system failure over a short period [14].

More studies are needed to determine the nutritional and non-nutritional factors which enable individuals to die just of old age—free of chronic disease. Lifelong healthy personal habits offer the best expectation of a healthy old age. More information is needed, but probably

the most significant are those concerned with diet, exercise, occupation, use of tobacco and alcohol, and sleep [15, 16]. Obesity, arduous work in heavy industry, little physical activity, smoking, alcoholism, social inactivity/loneliness, widowhood, lack of family and informal support networks have all been found to contribute to premature mortality [2].

The longer life expectancy of women in the Occident is due to their lower death rates from cardiovascular diseases and cancer. While there is some evidence that part of the reason is genetic, the main factor is likely to be the detrimental health practices and unhealthy lifestyle which successive cohorts of adult males have adopted, prominent among which is cigarette smoking [2]. The social effect of these mortality differentials is profound, generating large sex imbalances at later ages and the social problems consequent on widowhood.

In the Orient, there is also considerable variation by country in the proportions of deaths attributable to different causes. Japan, which has one of the longest life expectancies (along with Iceland), has the lowest contribution from heart disease, but the highest contribution from cerebrovascular disease. Almost half the deaths from malignant neoplasms are from lung, stomach and non-rectal intestinal cancers.

There are very few available data from China on major causes of death. The most recent (1985) statistics [13] show that major causes of death per 100 000 of the population are diseases of the heart 25.5%, diseases of the circulatory system 15.6%, cancers 15.2%, diseases of the respiratory system 12.3%, digestive diseases 5.5% and tuberculosis at 3.7%. In other Oriental countries, the picture is similar, with diseases of the circulatory system (heart disease, stroke, hypertension) and cancers being the major causes of death, along with diseases of the respiratory system (especially pneumonia).

In Africa and India, chronic diseases of affluence are not yet a major problem. The chief causes of death are infections and parasitic diseases like measles, diphtheria, diseases of the respiratory system, gastrointestinal infections, malaria and tetanus. The Middle East and Latin American countries are now reflecting death rates from causes common in the Occi-

dent, but parasitic and infectious diseases are still major problems in some of these countries.

Hunter-gatherer societies (e.g. Australian Aboriginals, American Indians, New Zealand Maoris), which have been integrated into Western cultures, still show high rates of parasitic and infectious diseases, but are also starting to reflect death rates from diseases common in the Occident—with rates often being much higher for various disorders like diabetes, hypertension, heart disease, obesity and alcoholism. More information is needed on morbidity rates, self-perceived health and sense of wellbeing. In a four-country study in the Western Pacific, more elderly Philippines regarded themselves as very healthy, compared to their counterparts in Korea, Malaysia and Fiji, but they also had the highest prevalence of health problems [3].

### Trans-cultural food consumption and data collection

Dietary information can be identified at three separate levels [17]:

#### 1. National level

*Structure:* major food components, i.e. cereals, meat, vegetables in the national diet

*Quality:* the macronutrients, e.g. calories, protein, fat, fibre, etc.

*Evolution:* the changing dietary profile of the nation with time.

#### 2. Subgroups of households

*Structure:* choice of foodstuffs, i.e. family purchasing patterns

*Quality:* group mean availability and macro and micro nutrients

*Evolution:* the changing dietary patterns of household categories with time.

#### 3. Subgroups of individuals

A survey designed to obtain quantitative or qualitative information on food consumption in groups of individuals. In addition to dietary practice, information on knowledge and attitudes can also be sought at this level.

Data relating to 1 and 2 may be derived from Food Balance Sheets (FBS) and Household Expenditure Surveys (HES) while 3 requires periodic sample surveys. The FBS are a national account of the annual production of food, changes in food stocks, imports and exports,

and distribution of food over various uses within the country. Daily *per capita* food availability is expressed in grams of food, energy and some additional nutrients. Food available at the household level may be estimated by a National Household Budget Survey or the more specialized Household Consumption/Expenditure Survey. Specific *ad hoc* studies are required to assess the dietary intake of individuals in and outside the home.

FBS only measure foodstuffs disappearing into consumption, i.e. uptake, not intake, and they do not provide information on the distribution of food-stuffs within the market system. HES surveys do not always include consumption outside the home or exclude various snack foods; nor do they register actual consumption of foods (only acquisition) and no information is obtained on food distribution within the household. Furthermore, survey procedures vary from country to country making comparisons difficult. The Food and Agriculture Organization (FAO, 1983) reported that HES surveys in a number of European countries tended to underestimate food expenditure by at least 11–34% when compared to FBS [17].

FBS are likely to be available from two sources: (a) the published statistics of the FAO (1984) and also from the Organization for Economic Cooperation and Development (OECD, 1985); and (b) nationally from the agency responsible for their compilation, e.g. Ministry of Agriculture.

FBS data enable a description of the current and evolving structure of a national diet in terms of the major food commodities and selected macronutrients which are disappearing into consumption; they are invaluable in determining if the nation as a whole is moving towards or away from national dietary guidelines. Inter-country comparisons, using both cross-sectional and time-series data, can be informative by indicating a country's position and progress in relation to other countries. Such comparisons must be interpreted with caution because of residual uncertainties arising from differing food accounting practices by individual countries, even after standardization required by FAO.

Possible relationships between trends in nutrition and foodstuff consumption and chronic

Table III. Estimates of the food supply in countries at different stages of development, 1975-77 [23]

	Developing countries	Eastern Europe & Asia	Developed countries
Energy/capita/day (kcal):			
Total	2282	2721	3373
Plant sources	2075	2259	2336
Animal sources	207	461	1037
Protein/capita/day (g):			
Total	57.8	74.5	98.5
Plant sources	45.4	50.2	43.3
Animal sources	12.4	24.3	55.1

disease patterns (at a highly aggregated level), as an initial attempt to elucidate the diet-health link, may be found using FBS. For example, a notable difference between the developed and developing countries is that available food supply *per capita* is significantly lower in the developing countries, with about 90% of available food energy and almost 80% of available protein coming from plant sources (Table III). By contrast, these respective percentages in the developed countries are 70% and 44%. Thus animal foods play a much more significant role in the average diet in the developed countries [18].

The fat composition of diets has also been reported to change over time in Europe. This information is based on FAO's standardization of production statistics and therefore gives only an approximation of actual intake of fat as a percentage of energy intake. It still shows how the percentage of total energy derived from fat varies considerably between countries in the region (Figure). It also demonstrates that the trends are largely towards higher fat consumption in all countries, with a levelling off in a few. It is interesting to note a downward trend in Norway, where a nutritional policy was adopted by Parliamentary decision in 1975 [19].

Table IV shows the consumption of most staple foods in Denmark. Cereals (bread and pasta) and potatoes went down by 30% and 40%, respectively, in 1982, while meat and egg consumption almost doubled. Alcohol con-

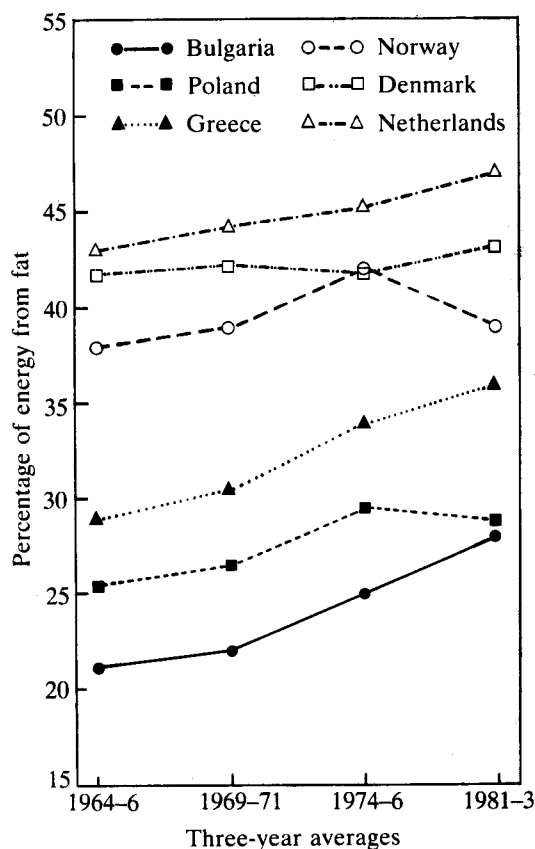


Figure. Percentage of total dietary energy derived from fat [25].

Table IV. Average consumption of various foodstuffs in Denmark (kg/person/year) [24]

Food	1952	1982	% Change
Cereal products	102	70	-31
Sugar	39	43	+13
Potatoes	120	68	-43
Cabbage	20	11	-41
Other vegetables	45	48	+6
Fruit and berries	60	43	-27
Meat, eggs, fish	86	121	+42
Milk products	175	168	-4
Butter, margarine, fats	27	29	+6
Alcohol	3	10	+233

sumption had increased tremendously. Helsing [19] speculated that, if these trends continue unchanged, linear projections would mean that the consumption of, for example, potatoes would simply stop in Denmark by the year 2000—soon to be followed by cabbage, fruits and rye bread. Helsing then further speculated “how far is human physiology able to deviate from some (unknown) ‘normal’ nutrient pattern before this has serious adverse effects upon health”. In other words, what is the body’s biological reserve and to what extent can individuals get away with ‘undesirable’ food habits before there are deleterious effects on health. For example, there are people who boast of never eating fruit and vegetables but claim to be as healthy as those who do!

This information can best be obtained by studying groups of people, especially elderly people, as they have survived with all sorts of food habits. The function of dietary surveys is not the nutritional screening of the individual, but rather to characterize the dietary profile (or attitudes or knowledge) of sections of society with the intention, if necessary, of designing an appropriate form of intervention, e.g. a targeted health education campaign formulating health policies. For this purpose, small-scale, or so-called ‘micro’ surveys, may be particularly efficient, supplying the information that FBS and HES do not provide. Although FBS and HES provide a coarse method for relating diet with health, they say nothing about actual individual intake across various age groups, they do not allow for consideration of food beliefs and habits of individuals, they cannot be used to assess biological reserve and excursions from it in groups of individuals, and they do not allow the opportunity to assess the influence of non-nutritional variables on health and food habits.

For these reasons, dietary surveys based on information from individuals play an important role in looking at determinants of health. However, as with each form of dietary survey, this also has its limitations. One must first distinguish whether information is needed on past or current intake and then choose the dietary method dictated by the study goals [18]. Past food intake can be assessed using the dietary history method, or food frequency check-list

(qualitative or quantitative) in conjunction with food photos or models to assist in quantitation. Current food intake can be assessed using the record method (frequency, menu and portion, and household measures), weighted method (inventory, precise, chemical analysis) or 24-hour recall. Each of these methods has limitations, in particular the diet-history method has not been found to obtain valid information from elderly subjects [5, 18]. In principle, however, there is no real ‘gold standard’, so the use of one method to validate another is questionable. Reproducibility studies are also difficult because the participants have often changed their food habits as a result of participating in the dietary study. That is why research on biological markers of food intake should be intensified. Additionally, the design of questionnaires which elicit both dietary and other life-style information is of paramount importance because the design and length can affect response errors [6, 11].

### **Key questions to be asked in trans-cultural studies**

At first, especially with non-literate communities, a general anthropological methodology may be required as described by Scrimshaw and Hurtado [20]. This approach is useful in obtaining specific information on the community; group enquiry may be more valuable than individual enquiry at this stage, especially with certain groups, e.g. Australian Aborigines. A questionnaire approach for individuals may later be applied, making sure to encompass guidelines specific to the wording and translation of trans-cultural research instruments, as described by Brislin [21].

#### *Specific Community Information*

Using a general anthropological methodology [21]:

*Geographical characteristics:* e.g. urban/rural, topography, climate, history, mode of transport.

*Demographic and epidemiological:* e.g. population size, sex and age distribution, birth rates, child and adult mortality and morbidity, ethnic

and religious groups, migration patterns, languages spoken, economically active population.

*Socioeconomic characteristics:* e.g. community organization, household organization, economic characteristics.

*Health resources*

*Housing conditions:* e.g. type, kitchen facilities, water source, electricity, disposition of human waste, inventory of key possessions, garden or local crops.

*Specific Individual Information*

Since answers are only as good as the questions, the questions included in trans-cultural study questionnaires are of crucial importance. An interviewer-administered questionnaire is probably more appropriate for the elderly, since a self-administered questionnaire is very difficult for many elderly people to complete owing to problems of literacy, writing skills, eyesight etc. The following areas should be considered when designing such studies [6, 11]:

*Non-nutritional variables*

*Health status:*

Self-rated health  
Health behaviour  
Health conditions  
Medications and herbal remedies  
Health aids

*Mental status:*

Memory and cognitive function  
Sense of wellbeing

*Mobility:*

Activities of daily living  
Exercise

*Social function:*

Social activity or ways of spending time  
Social networks/relations

*Economic resources:*

Sources of income, approximate total annual income, adequacy of resources for basic needs, desire to work past retirement

*Other health habits:*

Smoking, sleeping pattern (nap during day), alcohol

*Demographic details:*

Marital status, lived in mainly rural or urban

areas, health of family and ages at death, employment history, household composition.

*Nutritional variables*

*Usual/habitual intake* (e.g. over past year):

Qualitative or quantitative food frequency questionnaire or diet history

*Current food intake* (e.g. over past couple of days/months):

Diet history, 24-hour recall, food records

*Distant past intake* (e.g. more than one year ago):

What elderly people were eating in their younger days, say in their early twenties may have considerable bearing on their current health and nutritional status. Information on distant past food intake can be qualified (not quantified—it would be too difficult and unreliable) by asking the subject whether they are eating more, less or the same amount of each food currently reported to be consumed in the food frequency, compared to a specific point in time in earlier life [11].

*Food beliefs* (e.g. what foods are thought good or bad).

**The advantages and disadvantages of trans-cultural studies**

*Advantages:*

Avoidance of a perspective bound by a particular culture

Comparisons between different populations help search for common risk factors and for cultural and health service variables that increase or reduce them

Catalytic effect on scientific investigation and establishment of baselines for measuring change

Hypothesis-generating

Stimulation of political interest.

*Disadvantages:*

The culture-specific questions asked make cross-country comparisons difficult

Formidable technical barriers in designing and conducting simultaneous studies in different countries

Language and distance are barriers, making communication between researchers very diffi-



cult, which can result in countries deviating from agreed protocol

Problems of the 'transportability' of the questionnaire over different cultures

Different types and quality of interviewers and coders; interviewer and supervisor training and quality control procedures are rarely standardized.

### The advantages and disadvantages specific to the study of elderly populations

#### Advantages:

Allows the assessment of survivors

The elderly subject is a disappearing source of cultural information

Unique biological category

Elderly people are often lonely and welcome the interest in their welfare and a chance to speak to someone

They are accessible, since they do not work, and spend a lot of time at home

#### Disadvantages:

Illness, disability, senility, loss of cognitive function and mood changes in some cases make it necessary to use proxies or informants

Memory loss will affect responses

In spite of the limitations of studying elderly people trans-culturally, there is much to learn from the aged population. We should capitalize on such opportunities to record beliefs and behaviours which would otherwise be lost, as the younger generation, in their effort to be 'modern', are losing interest in the traditional beliefs and practices which their elders are trying to pass down. The limitations are reduced with careful planning and organization—it is only by doing such research that methods will be fine-tuned and more information obtained on the determinants of health in later life.

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