Nutrition in 70-year-olds

Dietary habits and body composition
A report from the population study "70-year-old people in Gothenburg, Sweden"

BY
BERTIL STEEN

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in fact the "analysis errors", inherent in all epidemiological works of such a magnitude as the present study. They might be compared with "analysis errors" in other types of scientific work such as in the field of clinical chemistry. Examples of weapons to minimize such processing errors are to check the completed forms, the identification numbers and numbers of forms and the transcription from forms into code rings, to perform verification key punching and listing of punch cards and to repunch incorrect punch cards, all of which was done in the present study.

A statistical problem often met in epidemiological work was also noticeable in the present study, namely the problem of mass significance; the problem of interpreting significant results when a great many differences and hypotheses are tested. A possible way of performing the evaluation of possible significant results, when the problem of mass significance is applicable, is to consider results significant only at the one per cent level and to stress significant differences between two groups of probands only if more than one test of significance points in a similar direction.

Results and discussion of the results

Observer variation

The problems of interobserver variation must be considered in large-scale population studies like the present one. This study showed that some interobserver variation existed between the two registered nurses engaged in the home call part of the study, with regard to some of the interview questions. Thus, answers to questions regarding i.a. "standard of dwelling unit" (males), "do not dare to go out in the evening" (males) and "social contact" (females) showed different proportions in the codings by the two home call nurses. In spite of thorough training before the study it was, thus, not possible to eliminate this variation. This fact must probably be accepted in most studies with more than one observer, regarding questions where the answers might be given and/or interpreted subjectively. The use of more than one observer in these parts might, however, also help to reveal these possibilities. There might be a greater risk for undiscovered bias if only one observer is used.

There are also risks involved in the existence of intraobserver variation. As far as this study was concerned and regarding the parameters studied (e.g. determination of heart volume and calculation of intakes of energy and nutrients) no significant such variation was observed.

Response

Practically all population studies suffer from the existence of non-response. It is not the size per se of the non-response group which is important but the extent to which this group differs from the examined part of the sample.

In the Kilsyth survey of persons 65 years of age and over, women were overrepresented in the non-response group (6). The non-response group in a study using a mailed questionnaire sent to persons up to 70 years of age revealed that the degree of response was correlated to total number of visits and year of last visit to a periodic health examination programme to which the probands were subjected (30). There was in that study nothing to suggest that the non-responders had any different distribution of medical conditions from that of the responders. The Edinburgh longitudinal study of persons 62 years and upwards

showed that the proportion of women in the non-examined group was significantly higher than in the examined group. Furthermore, non-responders of both sexes seemed to have had significantly less hospital care than the responders (66).

The above-mentioned studies are examples of studies with a reported analysis of the non-response groups. However, in many cases results from population studies have been reported where it is not obvious for the reader to judge the degree of representativeness of the examined probands.

In the present study the non-response was relatively small (10 per cent in males and 14 per cent in females) in the home call part of the study and another 4 per cent (males) and 2 per cent (females) in the hospital part (Table I—from Paper I). Furthermore, no significant differences were observed between the non-responders and the examined group of probands regarding sex, marital status, income, community rent allowances, proportion of probands registered in the Register of Temperance Board or occurrence of care at in-patient and out-patient psychiatric departments (among those probands who were examined by the psychiatrist and the psychologists). The only observed significant difference between the two groups regarded the proportion of 70-year-old females who had been subjected to somatic hospital care during the last five years, which was lower in the non-response group than in examined probands. This result is in agreement with those of Milne *et al.* (66) and Akhtar (6) concerning women.

It is a common experience (15, 42, 47, 68) that non-response is higher in higher age groups. In many population studies in these groups, therefore special attempts have to be made in order to minimize non-response due to refusal. In our opinion the principal factor in this respect is personal contact with the propositi, not only by letter, but also by telephone calls and personal home calls.

It is our opinion that the home calls should be made by registered nurses or other medical personnel. Frequent questions to our home calling nurses were "Does it hurt?" and "Will my health improve by participating in the study?", etc. Furthermore, instructions of e.g. urinary sampling are made easier at a home call by medical personnel than by anybody else.

The dietary interviews and the body composition examinations in this study were in the form of "subsequent" studies on subsamples after the general examination. It probably has to be accepted that there will be a "secondary" non-response between the hospital examination and the subsequent investigation. Such non-response is, however, more easy to evaluate than a "primary" non-response, since there is already data available on these non-responders from the hospital examination, which will allow a thorough analysis of possible differences between responders and non-responders in that particular subsequent examination.

Concluding remarks

Nutritional factors are closely interrelated to the social and medical condition of an individual and of a group of individuals. Therefore, broad epidemiological studies also including social and medical data are suitable for answering questions related to nutrition factors. To study nutrition as an integrated part of the social and medical condition of 70-

year-olds was the main objective of the substudy within the population study "70-year-old people in Gothenburg, Sweden" which is reported in this presentation.

The validity of the nutritional data is partially dependent on the degree of representativeness of all studied probands in the total study compared with the population "70-year-old people in Gothenburg". It is concluded that the studied probands are, generally speaking, representative of that population. It is also concluded that the design and procedure of the population study were adequate and that observer variation—although it existed for some social data—did not affect generally the possibilities of drawing conclusions from the collected data.

70-Year-Olds in Gothenburg—Dietary Habits

Introduction

Knowledge of the nutritional situation of a group of individuals is necessary when evaluating their present and future state of health, in planning of social and health activities and in tracing population subgroups in the risk zone for malnutrition. The increasing number of elderly people in industrial countries—in absolute as well as in relative terms—makes the elderly population an especially interesting one in this respect. This is so also because of the possibilities of changed nutritional demands in old age due to altered physical activity, ageing processes per se and the frequent occurrence of disease—for discussion see Paper II.

The dietary habits of a population (e.g. intake of energy and nutrients and meal habits) can be revealed by a number of methods such as weighing methods, record methods, and interview methods—for a review see (77). The two interview methods used in the present study have been used extensively throughout the years—the 24-hour recall method was described in 1942 (92) and the dietary history method in 1947 (22). The validity of these methods in the present material is discussed later on.

There have been numerous studies throughout the years concerning dietary habits in elderly people—for a review see (31). Paper II includes examples from U.K. In the present review, however, the literature survey will be limited to Swedish studies, since dietary data is closely related to e.g. geographic, socio-economic and ethnic factors. Also between countries so similar in social structure and geography as Sweden and U.K. comparisons have to be made with caution because of differences in the same age group regarding factors like e.g. weight/height ratios, examples of which are given in Paper II and Paper III.

Surveys in Sweden in which studies of dietary habits of elderly people were the only, or a major, component comprise studies with the 24-hour recall method (48, 85, 88). As discussed later on and in Paper II this method tends to give lower values of intakes of energy and nutrients than the dietary history method.

In one study of elderly people with dentures in both jaws the 7-day dietary record method was used (86) and in another in Dalby the duplicate portion technique (1, 2, 3, 5, 20, 25, 54, 75) a technique which apparently gives lower values than the interview methods—for a discussion on this see (21, 51, 82). In three studies meal habits have been studied without calculating intakes of energy and nutrients (9, 53, 72).