The Jerusalem seventy year olds longitudinal study
I: Description of the initial cross-sectional survey

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Abstract. The main objectives of our first cross-section of a longitudinal study of a cohort of 70 year olds in Jerusalem, are to survey the social and medical conditions of the heterogeneous elderly population and to contribute to the knowledge of aging processes for specific age-groups. Whereas, most previous surveys were conducted on homogeneous and stable population groups, the elderly of Jerusalem provide the basis for ethnographic comparisons and for assessing the impact of profound historical and personal changes. From a representative systematic sample (from a geographically sorted electoral register) of 759 persons, 605 persons replied to our home-visit questionnaire gathering data on migration history, dwelling conditions, health status, health service utilization, employment status, activities of daily living, social support, use of drugs and war experience. Later on, 463 persons attended our geriatric research institute where we gathered information from in-depth anamnesis and physical examination, as well as cognitive and psychological tests. In addition, a battery of biochemical and hematological blood tests were performed as well as urine analysis and culture, ECG and pulmonary function tests. The heterogeneity of our cohort population is demonstrated by the finding that 84% were born in 40 different countries outside of Israel. In contrast, in the seventy-year old population studied in Gothenburg, Sweden, only 3% were not native born. In the years 1996, 2001 and 2006, our initial study cohort will be re-examined and compared to control groups representing states of no-survey intervention until ages 75, 80 and 85 years old. This background paper describes the study design, protocols and procedures. The responders were found to be representative of the 70 year old Jewish population in Jerusalem as a whole, in terms of mortality and hospital utilization rates. The results of the study to be reported in subsequent papers will allow conclusions regarding all 70 year old Jews in Jerusalem to be made.

Key words: Cohort study, Elderly, Longitudinal study, Population study

Introduction

Owing to the biases inherent in cross sectional comparisons, resulting from the cohort-effect [1, 2] and differential mortality [3], it is crucial to study the aging process using more extensive longitudinal studies allowing detailed follow-up of the state of an individual’s health. The United States pioneered epidemiological multi-disciplinary longitudinal surveys on aging, such as the Pensacola aviator [4], Tecumseh project [5], Minnesota [6], Boston [7], Framingham [8], Baltimore [9], Duke [10], and the Established populations for Epidemiologic Studies of the Elderly (EPESE) in Iowa [10], Boston, MA and New Haven, CT [11]. A specific longitudinal population study, performed on proven representative samples [12, 13], and including age cohort comparisons [14] as well as an intervention study [15] added to one of the three cohorts, is being carried out in Gothenburg, Sweden. A further longitudinal study is being carried out in Koganei, a suburb of Tokyo, Japan [16, 17]. These studies have not only had immense significance for health care planning, but have also increased the knowledge of human physiology and established guidelines for the understanding, prevention and treatment of major disease groups. Such surveys need to be carried out in many types of populations in order to distinguish between signs of the normal aging process and those of diseases and also to study environmental and genetic factors in the process of aging and disease.

Israel offers an extremely heterogeneous population with respect to ethnic origins and immigration patterns. Since its establishment in 1948, Israel has made the transformation from a high mortality/high fertility society to a low mortality/low fertility
society, similar to other western countries with aging populations. As fertility and mortality decrease, the proportion of aged automatically increases.

As in most developed countries [18, 19], the absolute and proportionate growth of the elderly in the Israeli population places increasing demands upon Israel's health services. In the 65–74 year old age group, males use 3.8 times and females 2.5 times as much general hospitalization days as the population as a whole [20]. For persons over 75 years old, males use 5.4 times and females 4.5 times as much general hospitalization days as the population average [20].

Moreover, the elderly are themselves growing older. The 'old-old' fraction of the elderly, the group with a heavy utilization of health care services, is increasing in both absolute and relative terms. In 1991 the Jewish population of Israel aged 75 years or more numbered an estimated 178,700 or 41% of the total Jewish population aged over 65 [21]. By the year 2000 there will be approximately 237,000 Jews over the age of 75, around 44% of the projected Jewish elderly population.

It is clear that if current demographic trends continue, demand for health services will grow considerably. Since geriatric care is emerging as an important portion of the work of the medical services, increasing investment is required to understand the processes underlying the development of debility and disability which eventually accompany aging.

Background data on Jerusalem's elderly
Jerusalem's total elderly (65+) population in 1991 numbered an estimated 40,500 (7.6% its total population), and is projected to grow to 52,000 by the year 2000. The Jewish elderly population, numbers an estimated 34,700 (9.0% of the total Jewish population in the city), and is by the year 2000 projected to reach 43,600 persons [21, 22].

Israel absorbed over 1.6 million Jewish immigrants between 1948 and 1991. As a result, Israel's population has diverse ethnic origins: 22% having Israeli origins, 18% Asian, 20% African and 40% having been born or having had their father born on the European or American continent [21]. Thus Israel offers unique opportunities for the study of aging among the different Jewish ethnic groups, as well as for assessing the impact of profound historical and personal changes. Jerusalem reflects Israel's ethnic diversities and immigration patterns.

Study objectives
This study is a cross-sectional beginning of a longitudinal study of a cohort of Jewish residents of Jerusalem, who in 1990/91 were 70 years old. In addition control groups representing states of no-survey intervention until 75, 80 and 85 years of age will also be studied in the years 1996, 2001 and 2006. Age-cohort effects will be measured by taking a sample of persons aged 70 in 1996. The study objectives are as follows:

1. To survey the social and medical conditions of the elderly population.
2. To contribute to the knowledge of aging processes and of norms for specific age-groups of elderly.
3. To provide a thorough medical examination to the participants, and thus act as a health screening program for the elderly. All relevant information to be passed on to the appropriate health care professionals dealing with the participant, and advice made available as necessary.
4. To reassess the initially surveyed group every 5 years, for changes in the study variables, obtaining normative data concerning the aging process from longitudinal and cross-sectional cohort comparisons. The two control groups will include persons who were selected at the same time as the study group, but will not be interviewed or examined until 1996 and 2001 respectively.
5. To generate baseline data on medical and psychological functioning of persons aged 70, 75, 80 and 85 years old.
6. To obtain social, demographic, health service utilization and epidemiological data, which will help us to more rationally devise methods of prevention, treatment and planning of the health services available to the elderly.
7. To examine the effect of ethnic, social, economic, lifestyle and environmental, factors on health and the functional consequences of aging.
8. To compare our study group of Jerusalem's elderly population with cohort studies of the elderly carried out in other countries.

Study procedures
The study was planned during the period Sept 1988 to December 1989.

Pilot study. Instruments for the home visit survey were tested and refined in a three-stage pilot study of 20 systematically selected persons in the Autumn of 1989. An occupational therapist carried out the interviews. Instruments for the hospital check-up were tested and refined in a one-stage pilot study on 25 individuals in the Autumn of 1989. No information from either of the pilot studies was included in the data bank of the main study.

Sample selection. The survey was performed during the period 1 June 1990 to 31 May 1991. Lists of all Jewish and non-Jewish inhabitants of Jerusalem who were born in 1920 or 1921, were obtained from the