Health Status of the Older Population in Estonia

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Aim. To assess the prevalence of physical, depressive, and cognitive disorders in the elderly population in Estonia.

Methods. The prevalence of various common morbidities was determined by a questionnaire sent to 200 general practitioners (GP). GPs were asked to collect data, use medical records, and interview five randomly selected patients (a total of 1,000 people aged 65 years or older). Physical morbidities of older persons were assessed according to their self-reports and reports of their general practitioners. Depressive symptoms and cognitive status were determined by 15-item Geriatric Depression Scale and Mini Mental State Examination, respectively. Response rate was 81%.

Results. The prevalences of diseases were as follows: hypertension 63.2%, arthritis 61.3%, ischemic heart disease 56.5% (history of myocardial infarction, 9.8%), heart failure 41.4%, heart rhythm disorders 37.5%, hypercholesterolemia 25.4%, kidney and/or urinary disorders 20.5%, osteoporosis 15.5%, diabetes mellitus 14.9%, chronic airway diseases 13.8% (emphysema 5.8%, asthma 5.5%), hypotension 11.1%, gastroduodenal peptic ulcers 10.6%, thyroid diseases 8.9%, malignant tumors 8.1%, psychiatric disorders 5.7%, and stroke 5.3%. Depressive symptoms were found in 40.3% and cognitive impairment in 22.5% of the elderly persons.

Conclusions. The general structure of diseases in the Estonian elderly population is similar to that of other European countries, but the prevalence of cardiovascular, depressive, and cognitive disorders is much higher.

Key words: age factors; aged; cardiovascular diseases; cognition disorders; depressive disorder; Estonia; prevalence

Aging of the population has become one of the major concerns in the health and social care of many countries. In this field, Estonia, like most countries in the Central and Eastern European region, faces a double challenge. First, there is little information about the prevalence of common diseases and syndromes among the elderly. Second, geriatric care in Estonia is poorly developed. At the same time, the population aging in Estonia is a rather fast process. The proportion of people aged 65 years or more is expected to grow from 14% in 2000 to 19-20% in 2030 (1). Given that the use of health care services of elderly people is approximately 2.5 times higher than their proportion among the total population (2,3), we can anticipate a significant increase in health care expenditures. To plan the development of health care for the elderly, it is important to assess their health needs.

Most scientific literature on old age comes from North America and Western Europe. The period of economic and social transition Eastern and Central European countries are going through influences predominantly the most vulnerable groups, older persons among them. Differences between the East and the West in the prevalence of certain diseases (particularly circulatory disorders) in middle-aged persons are considerable (4,5). We have supposed that the East-West differences also exist among older persons.

The aim of this study was to determine the prevalence of common diseases and syndromes among the elderly in Estonia. The study was a part of the "Health and Coping of Older Estonians 2000" project (HACOE 2000), which, in addition to the analysis of health problems of the elderly, included the evaluation of their coping with everyday life, use of health and social care services, and problems encountered by the professionals working with the elderly.

Methods

Subjects

The aim was to obtain a representative sample of older people (65 years or older) with respect to their sex and residence (urban and rural, throughout the Republic). The sample of 1,000 people, which comprised approximately 0.5% of 206,915 total older population (67,419 men and 139,496 women; 162,217 urban and 44,698 rural), was considered optimal because it guaranteed sufficiently exact estimates for the population with rather homogeneous background. The subjects were divided in groups according to their age as follows: 65-69, 70-74, 75-79, 80-84, and 85 years and older. Each age group comprised equal number of persons, because we expected more serious problems among older people whose proportion in the population was rather small.

General practitioners (GPs, family physicians) were included in the survey as interviewers because of the following rea-

sons: GPs are professionally trained in interviewing patients and performing psychiatric tests; there are GPs all over the country; and older person's attitude towards his or her GP is usually confidential. Also, we could compare data provided by the older subjects with those provided by GPs. Practically all pensioners (institutionalized patients included) in Estonia are under the care of either a GP they chose themselves or a district GP. The sample of 200 general practitioners was chosen from the list of all Estonian GPs (more than 500) by a random numbers generator, regarding the number of older persons in each of 16 Estonian regions. Accordingly, each GP received different instructions of how to select five persons from their list for the survey interview, ie, the third 75-79 year old man from the beginning of your list of patients.

Study Design

A questionnaire for older persons and GPs was compiled by an interdisciplinary group of experts. The questionnaire was divided into two sections, one to be filled out by the older person and another to be filled out by the GP. Older person was asked to provide personal data (education, family), data on housing, coping and needs for services, hobbies, knowledge about social services, and health. GPs were asked to evaluate their patient's health (same questions as to the patient) and fill out the questionnaire after having interviewed a person. The prevalence of chronic morbidities was evaluated by older persons themselves *(Have you ever been told by a physician you have had any of the following disorders?)* and thereafter separately by their GP *(Have you or any other physician diagnosed following disorders in the person?)*. There were 19 common disorders on the list. No additional laboratory test results were required. Depressive symptoms and cognitive status of the patients were assessed with 15-item Geriatric Depression Scale (GDS15) (6-8) and Mini Mental State Examination (9), respectively.

GPs were contacted personally and, in case they agreed to participate, carefully instructed about questioning. GPs interviewed the patients after obtaining consent from each selected patient to participate in the study. The survey was performed during April and May 2000.

Statistics

We used the stratified sample design of the study: the population was divided by age and sex into non-overlapping subpopulations – *strata*. A probability sample was selected in each stratum. The selection in different strata was independent.

The population estimates were calculated by sampling weights (w_i), which allowed the results of survey to be generalized to the whole population.

The construction of confidence intervals was based on the weighted standard errors and on normal approximation of the estimates of mean. We calculated 95% confidence intervals for the population means and population proportions. To test differences between population means in two age and gender groups, t-tests for weighted means were used, whereas to test differences between population proportions in two age and gender groups, asymptotic t-tests for weighted proportions were applied. The difference was considered statistically significant if p-value was <0.05.

The relationship between dichotomous variables was estimated by Cramer's V. Data were analyzed by SAS System Software, Release 8.1, for Windows operating system.

Results

We received 811 filled-out questionnaires (response rate 81.1%). There were 82 men and 82 women of 65-69 years of age; 83 men and 84 women of 70-74 years; 81 men and 81 women of 75-79 years; 76 men and 83 women of 80-84 years; and 69 men and 90 women of 85 and more years of age.

In general, the self-reported data corresponded with GPs' reported data (r=0.6-0.7). We used the data provided by GPs to determine the prevalence rate.

All results are presented as weighted data characterizing the whole older population of Estonia, with prevalence rates of chronic disorders according to age and sex groups (Table 1, Fig. 1). More than half of the elderly surveyed had hypertension (63.2%), musculoskeletal disorders (61.3%) and ischemic heart disease (56.5%). Other frequent diagnoses were heart failure (41.4%), depressive symptoms (40.3%), heart rhythm disorders (37.5%), hypercholesterolemia (25.4%), cognitive disorders (23.1%), and disorders of kidney and urinary tract (20.5%).

We found differences in the prevalence of disorders among the age and sex groups. The prevalence rates of ischemic heart disease (p=0.049), hypotension (p=0.003), depressive symptoms (p=0.001), and cognitive disorders (p<0.001) were higher in

Table 1. Prevalence rates of chronic disorders in Estonian older persons, as reported by their general practitioners[a]

Chronic disorders	Individuals with the disease, according to age (%)		
	65-84 years (n=189,238)	85 and older (n=17,677)	Total elderly population[b] (N=206,915)
Hypertension	63.8	55.2	63.2 (59.6-66.8)
Musculoskeletal disorders	61.8	56.3	61.3 (57.7-64.8)
Ischemic heart disease	55.8	64.9*	56.5 (52.7-60.1)
Heart failure	40.8	49.1	41.4 (37.7-45.1)
Rhythm disorders	36.9	44.6	37.5 (33.9-41.2)
Hypercholesterolemia	26.5	12.2***	25.4 (22.2-28.8)
Kidney or urinary tract disorders	20.8	17.6	20.5 (17.5-23.5)
Osteoporosis	15.2	19.5	15.5 (12.9-18.2)
Diabetes mellitus	15.4	9.4	14.9 (12.4-17.7)
Chronic airway diseases	14.1	9.9	13.8 (11.2-16.3)
Hypotension	10.4	19.6**	11.1 (8.9-13.7)
Gastroduodenal peptic ulcers	10.5	11.8	10.6 (8.4-12.8)
Myocardial infarction	10.0	7.3	9.8 (7.7-12.2)
Thyroid diseases	9.4	3.3*	8.9 (6.8-11.1)
Malignant tumors	8.0	8.5	8.1 (6.0-10.0)
Psychiatric disorders	5.5	8.1	5.7 (4.1-7.4)
Emphysema	5.6	8.2	5.8 (4.1-7.6)
Asthma	5.8	1.9	5.5 (3.9-7.2)
Stroke	5.3	6.0	5.3 (3.6-6.9)
Depressive symptoms (GDS15 score >5)	39.2	52.8***	40.3 (36.9-43.7)
Cognitive disorders (MMSE score <25)	20.7	51.3***	23.1 (19.8-26.6)

[a]Differences between age groups are designated by the number of asterisks: one, p<0.05; two, p<0.01; three, p<0.001. Weighted data are presented.
[b]95% confidence intervals.

very old persons, whereas the prevalences of hypercholesterolemia (p<0.001) and thyroid diseases (p=0.019) were higher in younger people. Other differences were not statistically significant.

Men had higher prevalence of chronic airway diseases (p=0.004), gastroduodenal peptic ulcers (p<0.001), myocardial infarction (p=0.001), and emphysema (p=0.009). Women, in turn, had higher prevalence of hypertension (p<0.001), musculoske-
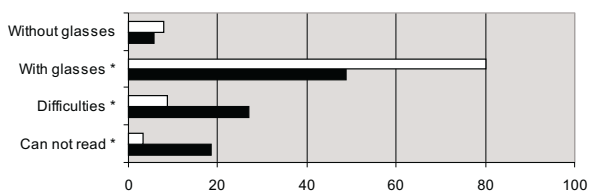
letal disorders (p<0.001), hypercholesterolemia (p=0.018), osteoporosis (p=0.001), diabetes mellitus (p=0.022), thyroid diseases (p<0.001), and depressive symptoms (p=0.02). No significant sex differences were found in the prevalence of ischemic heart disease, heart failure, rhythm disorders, kidney or urinary tract disorders, hypotension, malignant tumors, asthma, stroke, or psychiatric disorders, including cognitive deficiencies.

The subjects' self-reported data were used to assess vision and hearing functions. There were no problems with reading a newspaper (with or without glasses) in 88.1% of elderly people; 10.3% were able to read only large letters and 3.2% could not read at all. Moderate hearing problems were present in 21.7% of the older population, whereas 2.6% were practically deaf. Persons aged 85 years or more had significantly more problems with reading (Fig. 2; difficulties with reading, p<0.001; can not read, p<0.001) and hearing (moderately impaired, p<0.001; seriously impaired, p<0.001; Fig. 3). Impaired hearing was more frequent in men than in women (25.8% vs 19.7%, p=0.041), but no gender differences were found in vision problems.

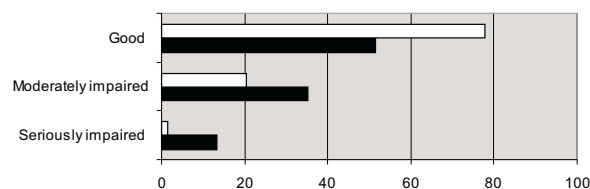The health perception of older persons was 2.9±0.7 points (mean±standard deviation) on a 5-grade scale (1 – very poor, to 5 – very good), with no significant differences between age and sex groups (Table 2).
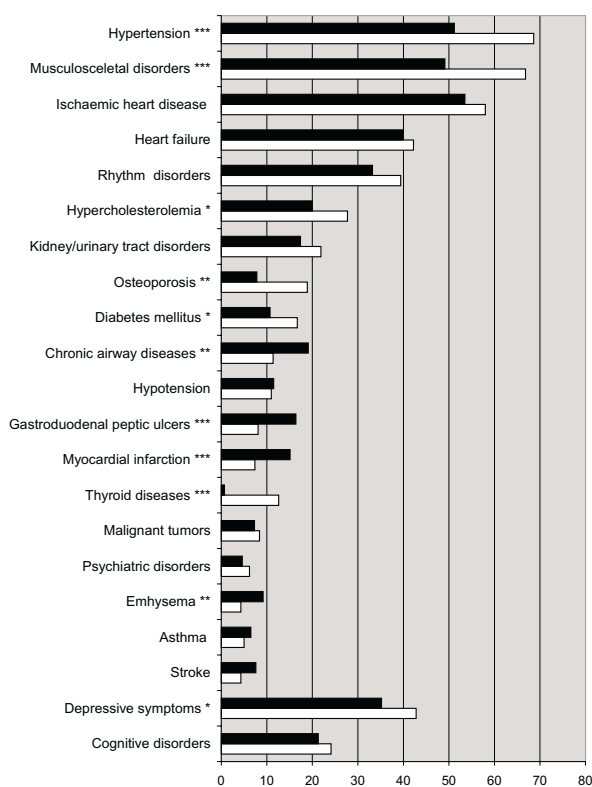
Figure 1. Sex-dependent prevalence (%) of chronic disorders in older population in Estonia. Weighted data are presented. Closed bars – men (n=67,419); open bars – women (n=139,496). Asterisks designate differences between genders, as follows: * p<0.05, ** p<0.01, and ***p<0.001.

Figure 3. Ability of older people in Estonia to hear (%). Weighted data are presented. Open bars – 65-84 years (n=189,238); closed bars – 85 years and older (n=17,677). Differences were found between all age groups, p<0.001.

Discussion

The results of our survey revealed a classical structure of health problems among elderly people, with cardiovascular and musculoskeletal disorders at the top of the list.

The differences in the results between our study and other studies became evident when we compared the prevalence rates of a particular disease found in our study with those in other studies.

Figure 2. Ability of older people in Estonia to read (%). Weighted data are presented. Open bars – 65-84 years (n=189,238); closed bars – 85 years and older (n=17,677). Asterisk designates differences between age groups, p<0.001.

Table 2. Self-perceived health (percentage and 95% confidence intervals) of Estonian elderly people[a,b]

Groups	Very poor	Poor	Moderate	Good	Very good
All (N=206,915)	3.2 (2.0-4.4)	17.8 (14.7-21.0)	64.1 (60.2-68.0)	14.2 (11.3-17.1)	0.7 (0-1.3)
65-84 years (n=189,238)	2.7	18.0	64.3	14.3	0.7
85 years or older (n=17,677)	9.3	15.7	62.0	13.0	0
Men (n=67,419)	4.6	16.6	63.6	14.2	1.0
Women (n=139,496)	2.5	18.4	64.3	14.2	0.5

[a] Weighted data are presented.
[b] p>0.05 for all age and gender group differences.

Before discussing the results, certain methodological aspects of the study should be considered. First, were our sample and study design correct? The estimates of main social indicators of older persons received form our survey fully agreed with the same indicators characterizing the same population groups calculated from surveys carried out in Estonia during recent years (10,11), thus there is no reason to suspect any essential methodological error. Second, were the diagnostic criteria of health problems strict enough? In self-reported data, certain medical disorders are often underestimated (12). To avoid this error, we used the data provided by GPs. GPs were instructed to use available medical documentation but not to perform additional diagnostic tests. This was a limitation of the study. However, reported data characterize the real situation how GPs treat their older patients in everyday practice.

When compared to other studies, no major differences were found in the prevalence rates of musculoskeletal disorders, kidney and/or urinary tract disorders, osteoporosis, diabetes mellitus, chronic pulmonary and bronchial diseases, gastroduodenal peptic ulcers, thyroid diseases, malignant tumors, and stroke (13-27).

The prevalence of hypertension was relatively high in Estonian elderly people: 63.2% vs 31-58% reported in other studies (17,18,28-30). A possible explanation could be lower cut-off points of blood pressure level used in Estonia (140/90 mm Hg). On the other hand, hypertension was also more prevalent in middle-aged population of post-socialist countries (31,32).

We found high prevalence of ischemic heart disease (56.5%), whereas other studies reported the prevalence of approximately 15% in older persons (17,18,33). The large differences in cardiovascular disease rates between Eastern and Western Europe have developed mainly over the last few decades. As the incidence rate of ischemic heart disease and especially ischemic heart disease-related mortality is decreasing in many Western countries (34-36), it remains high in Central and Eastern European countries (5,37,38). Although some say that the differences could only partly be explained by a higher prevalence of classical risk factors of ischemic heart disease, and that they should rather be interpreted in the context of existing differences in the overall socio-economic situation (5,39), it seems hardly possible that four times higher prevalence of ischemic heart disease among the older population in Estonia is caused mainly by a different socio-economic situation. Problem of diagnostic criteria for ischemic heart disease could be partly responsible for such a big difference. Osler and coauthors (35) showed that although mortality of acute myocardial infarction in Denmark decreased from 1982 to 1992, more broadly defined diagnostic groups showed less or no decline in the incidence. The use of less strict diagnostic criteria for ischemic heart disease in Estonia is supported by the fact that the prevalence of myocardial infarction, which is a well-documented medical condition, was comparable to that in other studies (17).

The prevalence of heart failure in our study was very high (41.4%). Other studies described a wide variation in the prevalence of heart failure in older persons, from 2.3% to 25% (40,41). Any attempt to describe the epidemiology of heart failure must take into account the difficulty of defining exactly what a heart failure is. Our data present the prevalence of physician-specific "operational diagnosis" of heart failure. Ranz and coauthors (33) claimed that the true prevalence of heart failure in older Americans was unknown and they believed it was underestimated.

Using a GDS15 rating scale, we found a high prevalence of depressive symptoms (40.3%) among the older population in Estonia. GDS15 was chosen because it is valid, highly sensitive, and non-culture-specific (6-8). The results of other studies showed that the prevalence of depressive symptoms among elderly persons was between 12% and 34%, depending on their age (8,17,42). A possible explanation of such a high prevalence of depressive symptoms could be rapid social and economic changes in the society during the last decade and the relatively poor economic status of pensioners in our country.

And last but not least, our study revealed a high prevalence of cognitive disorders (23.1%) among older persons in Estonia, which were assessed by Mini Mental State Examination (9) with a cut-off point of 25. Other reports described the prevalence of dementia among the older population from 4.5% to 20% (43,44). Our survey data were not sufficient to explain that finding, but considering the high prevalence of depression, it might be that part of cognitive disorders were actually pseudo-dementia.

Self-reported vision and hearing problems in Estonian older persons could be compared to that of elderly people in the USA (45,46).

The health perception of the elderly in Estonia was reported more often as very poor or poor and less often as very good or good when compared to that of older people in the USA. (28) and Finland (13). Considering high prevalences of circulatory disorders, depression, and dementia, this finding is not surprising.

In conclusion, the overall structure of diseases of older people in Estonia was similar to that in other European and North American countries, but the estimated prevalences of cardiovascular diseases, depressive, and cognitive disorders were significantly higher.

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