

## Health and Disease at the Age of Sixty

### Findings in a Health Survey of 60-year-old Men in Uppsala and a Comparison with Men 10 Years Younger

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#### ABSTRACT

A health investigation was performed among 331 men aged 60 years in Uppsala. The investigation was performed in the same way as in 50-year-old men ( $n=2322$ ) in the same community, previously described. Thus it was possible to make certain comparisons between these two populations of middle-aged men. A considerably higher morbidity, given as point prevalence, was found for diseases of the cardiovascular system and of the endocrine organs, in the older population compared with the younger. Parallel to this a higher consumption of pharmaceuticals was reported by the older men. Only 39% among the older men versus 51% of the younger men were smokers. Nearly the same number (two-thirds) of men in both age groups were without codable ECG abnormalities in their resting ECG. Among the older men, however, there were more subjects having multiple pathological ECG findings than in the younger age group.

It is concluded that it is possible to reach approximately 80% of the actual population in special health investigations, in middle-aged men. Future studies, preferably in younger subjects, should aim at an early detection and primary prevention of cardiovascular and endocrine diseases.

#### INTRODUCTION

During recent decades numerous studies have been performed to elucidate factors that increase the risk of cardiovascular disease and death. Cardiovascular disease has been accorded special importance due to its large and increasing contribution to morbidity and mortality in modern society.

In Sweden, studies have been carried out in Gothenburg (34), Stockholm and Uppsala (15), among other places. This paper deals with general findings in a health survey of 60-year-old men in Uppsala. They were investigated in much the same way as another group of men, at the age of 50 (15) in the same community. These men were born in the period 1920-24. They numbered 2322 subjects and were investigated in 1970-1973. Comparisons with this younger age group will be made, with respect to

blood pressure (37) and glucose tolerance and serum lipid levels.

Some additional studies were made on the same population, including the occurrence of cardiac arrhythmias in daily life, alcohol intake and patterns of urinary electrolytes. These will be reported on elsewhere.

#### MATERIAL

The population consisted of all men born in 1915 living in Uppsala in 1975. They numbered 422. At the time of screening they were living within the same area as were the 50-year-old men of the previous study.

The population of the corresponding area of Uppsala on 1st January 1975 was 108 676. Of the above-mentioned 422 men called for health examination, 331 arrived, which meant a participation rate of 78.4%.

From the registers of the County Council in Uppsala, the names and addresses of all men born in 1915 were collected. In order to get a relevant list, this collection was made 3 months in advance of the forthcoming examination.

#### METHODS

A letter was sent to each man in the population one week in advance, inviting him to the health survey and explaining its purpose. In the letter the subject was asked to fast and also refrain from smoking from midnight prior to the morning of the investigation. This started at 7.00 am. The examination was performed by the author, with the assistance of the same registered nurse as in the study of 50-year-old men (15). It took place in the outpatient clinic of the Department of Internal Medicine at the University Hospital of Uppsala.

Non-participants were all offered another appointment by direct telephone contact.

The investigation started in the middle of August 1975 and was completed by the end of November the same year.

#### Questionnaire

A self-administered questionnaire modified after Collen (7) was used. It contained 145 questions, including family

Table I. *Laboratory investigations performed in the health investigation of 60-year-old men*  
 Mean values, standard deviations and laboratory methods used by the laboratory

System	Component	n	Mean	S.D.	Method
Serum	Albumin	331	4.2 g/l	0.35	Brom cresol green binding technique
Serum	Calcium	331	2.4 mmol/l	0.08	Atomic absorption method using internal standardization with strontium
Urine	Calcium	326	5.4 mmol/d	2.8	Atomic absorption method using internal standardization with strontium
Serum	Cholesterol	331	6.2 mmol/l	1.2	Auto-Analyzer N-70
Serum	Creatinine	331	83.4 $\mu$ mol/l	13.6	Jaffé reaction after dialysis
Urine	Creatinine	327	11 980.8 $\mu$ mol/d	3 007.8	Jaffé reaction after dialysis
Urine	Ethanol	36	251.7 mg/l	408.1	Alcohol dehydrogenase method
Blood	Glucose	331	5.4 mmol/l	1.6	Glucose oxidase method after zinc hydroxide preparation
Serum	Glut. trans-ferase	324	0.33 $\mu$ kat/l	0.27	Kinetic photometric method according to Szasz
Urine	Magnesium	327	3.8 mmol/d	1.7	Atomic absorption method
Serum	Phosphate	331	0.9 mmol/l	0.3	Dialysis of sample and reduction of phosphomolybdate with Elon
Urine	Phosphate	326	29.4 mmol/d	8.9	Dialysis of sample and reduction of phosphomolybdate with Elon
Urine	Potassium	326	70.6 mmol/d	24.4	Flame photometric method using internal standardization with lithium
Urine	Sodium	326	159.7 mmol/d	61.5	Flame photometric method using internal standardization with lithium
Serum	Triglycerides	329	1.7 mmol/l	1.0	Auto-Analyzer N-24 a
Serum	Urate	331	269.9 $\mu$ mol/l	64.9	Uricase method
Blood	Erythrocyte sed. rate	330	8.1 mm/h	7.2	Westergren's method
Blood	Haematocrit	330	44.9 %	3.2	Micromethod in duplicate using international microcapillary centrifuge

history, previous diseases, smoking habits, and stress symptoms among other things.

#### Personal interview

This procedure included questions about marital and professional status, consumption of medicines, dietary regimens, etc. Contacts with a physician and the reasons therefore were also noted. Each subject was also asked if he took advantage of the general health survey in the county that is offered by the local health authorities every third year.

#### Blood pressure measurements

Blood pressure (BP) was measured on the right arm after 10 min in the recumbent position and after another 2 min in the sitting position. The pulse rate was counted immediately prior to the first BP measurement. A mercury wall manometer (Kifa Ercameter) was used. The cuff had a rubber bladder 12 cm wide and 35 cm long. Systolic BP (SBP) and diastolic BP (DBP) were recorded to the nearest 5 mmHg. DBP was recorded at the disappearance of the Korotkoff sounds (phase 5).

#### Anthropometric measurements

The height without shoes and the weight in undershorts were measured in whole centimetres and kilograms, respectively. In order to define relative body weight, three weight indices were used: 1) an index described by Lind-

berg et al. (24), 2) an index based on the findings of insurance holders in the USA (5). 3) Finally the heights and weights of the 50-year-old men in the same community (15) were used as a reference to relative body weight index in the 60-year-old men.

Body fat was estimated with a Harpenden (9) caliper. Three parts of the body were measured: to the right of the umbilicus, under the angle of the scapula and at the back of the mid-upper arm. All these measurements were made in the sitting position and were recorded in whole millimeters.

#### Laboratory investigations

All blood samples were taken in the fasting state. The laboratory investigations performed are shown in Table I together with the methods used by our central laboratory. The mean values are also presented in this table.

The morning urine was examined qualitatively for glucose and albumin, using paper sticks. Each participant was then asked to collect all urine for 24 h following screening, in a plastic bottle.

An intravenous glucose tolerance test (IVGTT) was performed in a randomized subgroup of 67 (20.2%) of the subjects who denied diabetes mellitus and all other diseases requiring chronic medication and dietary treatment. These findings will be described separately (38) and will include a comparison towards 50-year-old men concerning insulin secretion at IVGTT.

Table II. *Percentage of positive replies to some questions in the self-administered questionnaire, in health surveys of 50- and 60-year-old men in Uppsala*

Questions	50-year-old men (n=2 322)	60-year-old men (n=331)
Does (did) your father have elevated blood pressure?	11.2	6.7
Does (did) your mother have elevated blood pressure?	25.2	16.3
Have you suffered from oppression of the chest when walking at normal speed on flat ground?	2.8	10.9
Do you get chest pains when walking outdoors in cold weather?	3.5	11.8
Do you get oppression of the chest when walking outdoors in cold weather?	3.3	11.2
Have you been in hospital for myocardial infarction?	0.9	4.2
Do you have the diagnosis angina pectoris established by a physician?	2.2	11.5
Do you take nitroglycerin tablets?	1.1	6.7
Are you a smoker?	51.0	39.6
Have you gained more than 10 kg body weight since the age of 30?	6.6	34.4
Do you feel absolutely well?	80.1	57.4
Are you retired for medical reasons?	1.1	10.0

#### *Electrocardiogram*

A resting 12-lead electrocardiogram (ECG) was recorded in all men. This included standard leads I, II, and III, unipolar leads aVF, aVL and aVR and finally leads V<sub>1</sub>-V<sub>6</sub>. The conventional amplification 1 mV=10 mm was used, with a paper speed of 50 mm/sec. The paper speed and amplification were frequently tested. The ECGs were interpreted by two independent physicians at the Depart-

ment of Clinical Physiology according to the Goldmann criteria (13) and to the Minnesota code (31).

A long-term ECG recording covering 6 hours was made (8) but will be discussed elsewhere (23).

## RESULTS

### *Questionnaire and interview*

Some results are summarized in Table II concerning questionnaire data obtained for the 60-year-old men, as compared with the 50-year-olds.

For the questions concerning angina pectoris (AP) there was a consistently higher percentage of positive replies in the older age group. Only 2.2% of the younger men reported AP confirmed by a physician, compared with 11.5% in the older group. This five-fold increase was also noted with respect to hospitalization for myocardial infarction.

Only 39.6% of the older men smoked as against 51.0% of the 50-year-olds. However, among the 60-year-old men 13.6% reported that they had stopped smoking after the age of 50. This would mean that 53.2% of those participating in the screening were smokers at the age of 50. Nearly two-thirds (64.9%) of the 60-year-old men who were smokers at the time of screening were not interested in smoking withdrawal trials.

Concerning body weight changes after the age of 30, almost one third (34.2%) of the older men reported an increase in body weight of more than 10 kg after the age of 30. In the younger group 6.6% reported a similar increase in a period of 20 years.

Half (50.8%) of the older men had access to a physician through their employer. Slightly more than three-quarters of the participants (77.8%) took advantage of the local health examination the last time they were called.

Table III. *Prevalence of diagnoses, reported as specific diagnosis, in health surveys of 50- and 60-year-old men in Uppsala*

Code number classification according to ICD. Only diagnoses established by a physician are included

Code number	Diagnosis	50-year-old men (n=2 322)		60-year-old men (n=331)	
		Subjects per cent	Number of men	Subjects per cent	Number of men
401	Essential hypertension	3.7	87	12.4	41
412	Ischaemic heart disease	0.6	15	4.2	14
250	Diabetes mellitus	0.9	21	4.8	16
443	Intermittent claudication	0.1	3	0.9	3

Table IV. Prevalence of diagnoses, reported as groups of diagnoses in health surveys of 50- and 60-year-old men in Uppsala

Code number classification according to ICD (International Classification of Diseases, 3rd Rev. Ed.). Only diagnosis established by a physician are included

Code number	Groups of diagnoses	50-year-old men (n=2 322)		60-year-old men (n=331)	
		Subjects per cent	Number of men	Subjects per cent	Number of men
140-239	Tumours	0.2	5	1.5	5
240-279	Endocrine, metabolic	1.2	27	12.1	40
290-316	Mental disorders	1.5	34	3.0	10
320-389	Nervous diseases	0.8	18	3.6	12
390-458	Circulatory diseases	5.9	136	31.1	103
460-519	Respiratory diseases	0.3	7	2.4	8
520-577	Gastrointestinal diseases	0.1	2	2.1	7
710-738	Musculoskeletal disorders	0.7	16	7.9	26

In Tables III and IV the occurrence of various diagnostic groups and specific diagnoses are shown.

An increase in general morbidity between the ages of 50 and 60 is apparent. Of particular importance, however, is the increase in diseases of the circulatory system and of endocrine and metabolic disorders.

In Table III the relative increase in specific diagnosis is seen. A five-fold increase in the prevalence of diabetes mellitus and a four-fold increase in the prevalence of hypertension was found.

This tendency is also reflected by the increase in

the use of medical preparations between the ages of 50 and 60. In the younger age group 224 men (9.6%) reported a daily drug intake, compared with 126 (38.1%) in the older group. The consumption of various classes of drugs in the two age groups is shown in Table V.

About 10% of the men born in 1915 were taking diuretics and/or beta blocking agents. No increase was noted in the use of insulin, while the consumption of oral antidiabetic agents was 10 times higher in the older age group.

The higher prevalence of musculoskeletal dis-

Table V. Pharmaceutical classification, according to FASS 1976, of drugs used by 50- and 60-year-old men as revealed in health surveys in Uppsala

Only daily drug consumptions are included

Pharmaceutical classification	Type of drug	50-year-old men (n=2 322)		60-year-old men (n=331)	
		Number of subjects	Subjects per cent	Number of subjects	Subjects per cent
02 A	Cardiac glycosides	8	0.3	13	3.9
02 B	Quinidine				
02 B	Beta blocking agents	33	1.4	36	10.9
02 C	Vasodilators	8	0.3	32	9.7
02 E	Sympathicolitics	33	1.4	13	3.9
02 F	Diuretics	53	2.3	35	10.6
02 H	Lipid lowering agents	23	1.0	17	5.1
06 C	Anticoagulants	1	-	2	0.6
10 D	Steroids	7	0.3	1	0.3
10 J 05	Insulin	10	0.4	2	0.6
10 J 10	Oral antidiabetics	9	0.4	13	3.9
11 A	Sedatives	6	0.3	22	6.6
11 B	Neuroleptics	10	0.4	4	1.2
11 C	Antidepressives	10	0.4	4	1.2
12 B	Analgesics	16	0.6	23	6.9

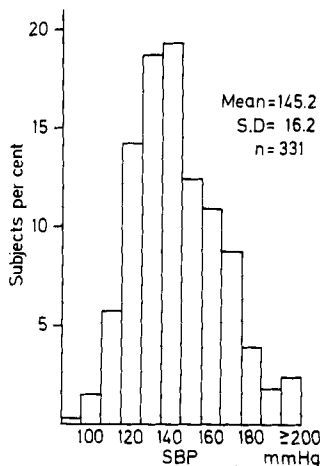


Fig. 1. Distribution of supine systolic blood pressure in the total population.

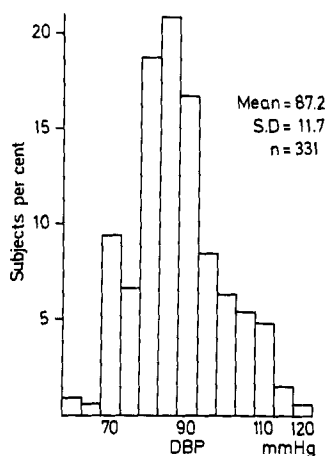


Fig. 2. Distribution of supine diastolic blood pressure in the total population.

orders in the older group is reflected by the greater consumption of analgesics. The more extensive use of hypnotics and sedatives in the older age group should also be noted.

**Blood pressure**

The distributions of SBP and DBP are shown in Figs. 1 and 2. The mean SBP was 145 mmHg and the mean DBP 87 mmHg in the entire studied population.

In addition to 41 (12.4%) men who were known as hypertensives at the time of screening, 23 (6.9%) were found to have a DBP of  $\geq 105$  mmHg. Thus the prevalence of hypertension was 19.3%, comprising the sum of these two population groups.

When the WHO criterion (39) for hypertension was applied, the prevalence increased to 35.0% of the population.

Thirty-six persons (10.9%) could not say if they

had been told previously that their BP was elevated. This should be compared with the other questions in the self-administered questionnaire, where the possible answer "do not know" was given only 12 times altogether concerning previous diseases, stress symptoms etc.

A detailed report of the group with hypertension will follow (37).

**Anthropometric measurements**

The results obtained on application of three weight indices are given in Table VI.

Using the index based on the 50-year-old men in the same community, 59.3% of the 60-year-old men fell within  $\pm 10\%$  of the "ideal" weight. When the U.S. insurance index (5) was used, this figure was 59.8%. Using the standards applied by Lindberg et al. (24), however, only 37.8% of the 60-year-old men fell within these limits.

Table VI. Distribution of 50- and 60-year-old men in Uppsala according to relative weight in per cent

Populations: 50-year-old men,  $n=2322$ ; 60-year-old men,  $n=331$ . Weight index 1 according to Lindberg et al. (24), Weight index 2 according to Build and Blood pressure study, Chicago (5), Weight index 3 based on anthropometric studies of 50-year-old men in Uppsala (15)

Weight index	Index 1		Index 2		Index 3	
	50 year	60 year	50 year	60 year	50 year	60 year
<0.90	4.4	5.7	17.2	13.0	28.0	22.4
0.90-0.99	14.7	9.4	32.3	32.0	34.2	35.1
1.00-1.09	28.8	28.4	28.3	27.8	23.9	24.2
1.10-1.19	27.3	26.0	15.0	18.7	9.2	13.0
$\geq 1.20$	24.9	30.5	7.3	8.4	4.7	5.4

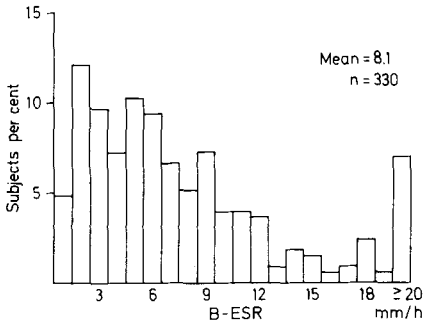


Fig. 3. Distribution of erythrocyte sedimentation rates in the total population.

*Laboratory investigations*

The distributions of the values for erythrocyte sedimentation rate (ESR) and of venous haematocrit are shown in Figs. 3 and 4, respectively. The mean ESR was 8.1 mm/h, and 43 men (13.0%) had a value of 15 mm/h or more. The mean venous haematocrit was 44.9%. Only 15 men (4.5%) had a haematocrit below 40%.

The values for fasting serum cholesterol are presented in Fig. 5. The mean value was 6.20 mmol/l. Subjects with values of 7.50 mmol/l or higher were re-tested ( $n=40$ ), and if they exceeded this limit again they were referred to the Department of Geriatrics for further evaluation.

Fig. 6 shows the distribution of serum triglycerides. This shows skewness to the right. However, after logarithmic conversion the distribution was normal (Fig. 7). The mean value was 1.68 mmol/l. Subjects with a value of 2.4 mmol/l or higher ( $n=46$ ) were re-tested and followed the procedure mentioned above for serum cholesterol.

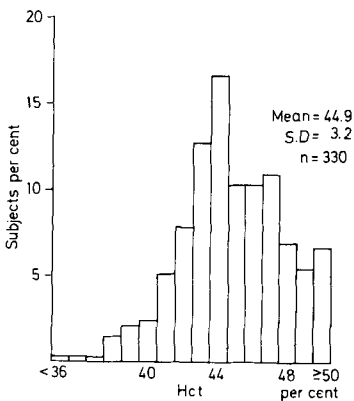


Fig. 4. Distribution of venous haematocrit values in the total population.

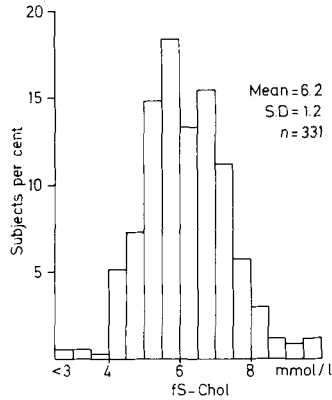


Fig. 5. Distribution of serum cholesterol values in the total population.

Finally, it should be mentioned that 36 (11.0%) of the men had detectable amounts of ethyl alcohol in their urine. Urinary electrolytes will be discussed in another article (37).

*Electrocardiographic findings*

The ECG findings were considered pathological in 52 (15.7%) of the subjects. In a further 19 men (5.7%) the ECG was considered to be possibly pathological.

In Table VII the ECG results, coded according to the Goldmann (13) criteria and to the Minnesota code (31) are shown, together with ECG findings in 50-year-old men in the same community. No codable abnormality was found in 67.1% of the men. The dominating findings were high QRS amplitude, which occurred in 11.8% and QRS axis deviation in 8.5%.

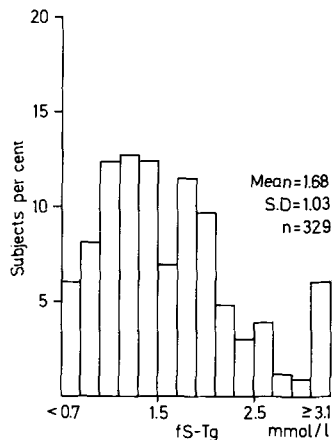


Fig. 6. Distribution of serum triglyceride values in the total population. Arithmetically plotted.

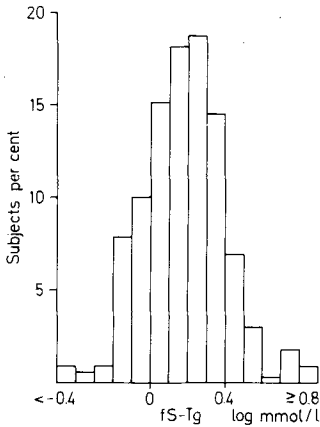


Fig. 7. Distribution of serum triglyceride values in the total population. Geometrically plotted.

## DISCUSSION

The participation rate in this study was somewhat lower (78.4%) than in the health examination of 50-year-old men in the same community (15), where it reached 81.7%. The somewhat lower figure could be explained by the larger number of older men who were already under the care of another physician. Another reason for abstaining from the screening might have been access to health controls provided by employers.

In the general health examination provided by the local health authorities, the male participation rate is about 70% for males aged 50 as well as 60 years (19).

In a primary preventive study in Gothenburg in 1970 (38) the participation rate reached 74% for men born in 1915. Almost the same figure was re-

ported by Isokoski (20) from a health survey in Finland. In that study the highest participation was found for ages between 35 and 44 years, after which it levelled off. This is in accordance with the findings reported by Napier (10) in their Tecumseh community study.

The questionnaire seemed to be an adequate method of getting information which could in many ways be confirmed by the personal interview. Concerning hereditary questions it has been found (36) that middle-aged men in Uppsala have a good knowledge of their parents' age at and cause of death. As mentioned previously, very few questions were given the answer "do not know" in the self-administered questionnaire. One exception was that 36 (10.9%) of the subjects were uncertain about previous information on a high BP. This is surprising and suggests uncertainty on the part of the physicians handling hypertension rather than anything else.

The comparison between 50- and 60-year-old men shows that the younger age group more often report a high BP in their parents than the older men. This might reflect the fewer opportunities of the older men's parents to be examined by a physician.

The prevalence of chest pain as revealed in the questionnaire seems somewhat higher than the corresponding figures in a study of men aged 55-59 in Finland (30), but is comparable to that reported for 60- to 64-year-old men in Prague (11). The validity of the diagnosis AP given in a questionnaire has been discussed by Lundman et al. (25). In this health examination additional information could be obtained at the personal interview in the cases with positive replies to the AP questions. Between 10.9

Table VII. Frequency of some codable ECG abnormalities according to the Minnesota Code in health surveys of 50- and 60-year-old men in Uppsala

A subject may be included more than once

Item	50 years (n=2 322)			60 years (n=331)		
	Code number	Number of men	Subjects per cent	Code number	Number of men	Subjects per cent
No codable abnormality	I, 0	1 608	69.6	I, 0	222	67.1
Q items	I, 1-2	22	1.0	I, 1-2	6	1.8
QRS axis deviation	II, 1	70	3.0	II, 1	28	8.5
High QRS amplitude	III, 1	207	9.0	III, 1	39	11.8
S-T depression	IV, 1	16	0.7	IV, 2-3	12	3.6
T-wave items	V, 1-2	53	2.3	V, 1-2	14	4.2
A-V conduction defects	VI, 1-4	47	2.0	VI, 1-4	9	2.7
Ventricular conduction defects	VII, 1-2	24	1.0	VII, 1-2	4	1.2
Atrial fibrillation	VIII, 3	7	0.3	VIII, 3	6	1.8

and 11.8% positive replies were noted to these questions, which corresponded well with the figure of 11.5% for subjects in whom AP was confirmed by a physician. The increased occurrence of ischaemic heart disease with age found in studies in Uppsala is in accordance with other reports (2, 10, 21, 26, 32).

The prevalence of diabetes was five times greater than in the 50-year-old men. This is in accordance with the findings of other authors (1, 4, 10, 28, 33) suggesting an age-related increase of prevalence, but contradicts the studies of Ostrander et al. (29), who found the most marked increase in prevalence in the age groups 40–49 years.

Studies on smoking habits showed that only 39.6% of the 60-year-old men smoked, as against 51.0% of the 50-year-olds. This diminishing frequency has been discussed by several authors (14, 16, 27, 35, 40). A more negative attitude amongst physicians towards tobacco smoking may have contributed to this age effect. This is evident, in fact, in the group of treated 60-year-old hypertensives, who smoked less than the population in general.

Measurements of haematocrit and ESR have been performed in many screenings, due to the simplicity of these tests and certainly for psychological reasons. However, the diagnostic value of these tests in this screening was not high.

The mean ESR values were 7.8 and 8.1 mm/h in the younger and older age groups, respectively. Only 9.4% and 13.0% had values above 15 mm/h in the respective age groups.

Many authors (3, 6, 22) have discussed the common finding of higher ESR values in aged populations, and regard a higher ESR value as normal in aged persons. Boyd (3), however, proposed that the probable upper normal limit in persons aged 65 years or more is 40 mm/h. Gibson (12) denies this age-related increase of ESR. The present study shows a negligible effect of age on the ESR values.

Choosing an arbitrary limit of 20 mm/h, 5.2% and 6.1% of the younger and older age groups, respectively, fell above this value.

Haematocrit was found to have the same proportion of low values in both populations; thus 6.3% in the younger and 4.5% in the older age groups had a haematocrit below 40%. In the older group none of the men had a haematocrit below 40% without a known cause. The mean haematocrit was slightly higher in the older age group.

The indices used in describing relative weight

showed that the Norwegian based index recommended by Lindberg et al. (24) classified relatively more men as overweight in both the 50- and 60-year age groups than the other two indices used. This is probably explained by the relatively lean Norwegian population chosen as a reference for the former weight index.

The two other indices used, one based on findings in the Build and Blood Pressure study in USA (5) and the other on findings in 50-year-old men in Uppsala (15) yielded almost identical results in describing relative weight. When the latter was used there seemed to be more young men with an index of 0.9, and more older men with an index of 1.1. However, these differences were not significant and the proportions of subjects in the two populations with an index between 0.90 and 1.09 were nearly identical.

A comparison of the ECG findings showed that almost the same proportion—approximately two-thirds—in the two studied populations had no abnormality according to the Minnesota Code (31).

No increase in the occurrence of Q-wave items was found, but proportionately more men in the older group had QRS axis deviation and T-wave items than in the younger men. Atrial fibrillation also showed a higher prevalence in the group of older men. Among the groups with codable abnormalities, there were more men with multiple findings in the older than in the younger age group.

Most reports on ECG findings are based on hospitalized patients, which make epidemiological comparisons difficult. However, in a large material of 122,043 ECGs performed in the U.S. Air Force, Hiss et al. (18) described various findings in different age groups. Proportionately more abnormalities, especially T-wave changes, were registered in higher ages. The same has also been found by Higgins et al. (17) in analysing results from the Framingham study.

The health examination of 60-year-old men gave results that, compared with those for 50-year-old men, may have been influenced by two factors.

Firstly the age factor, which manifested itself as increased morbidity and thus increased consumption of medical preparations. This tendency is of general importance, as the proportion of aged people is going to increase in Sweden.

Two main diagnostic groups—diseases of the circulatory system and diabetes mellitus—merit special interest. Primary preventive activities and



early detection of these diseases ought to be given priority in future health screenings of younger groups.

Secondly, factors operating within a changing society may have influenced the results. Thus the decrease in the number of smokers between the ages of 50 and 60, which is a common feature, might be explained in many ways. One contributory factor may be the increased propaganda in the mass media against smoking. In the study of 50-year-old men in the same community (15), various primary preventive activities were carried out. These included a smoking withdrawal programme, dietary information and treatment of increased BP. Some of these activities may have influenced the attitudes of other groups of middle-aged men.

The relatively larger number of 60-year-old than 50-year-old men who are retired may to a certain extent be ascribed to age, but the more liberal rules as regards retirement, especially on account of medical disablement, probably accounts for some of the increase.

Finally, the expansion of health screening examinations and medical services offered by employers, in particular, must be considered. Thus, it was noted paradoxically that many 60-year-old men who participated in this screening also reported frequent contacts with other medical authorities. Nevertheless, the increased number of 60-year-old men already under the care of other physicians may have been the reason for part of the lack of participation in this health examination.

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