

HYPERTENSION IN THE ELDERLY: AN OPPORTUNITY TO IMPROVE HEALTH

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INTRODUCTION - BLOOD PRESSURE AND AGE

Blood pressure tends to rise with age in most Western countries, but this is not so in all societies for in some populations in the developing world any rise in blood pressure with age is minimal.¹ The increase in blood pressure with age is attributed pathogenically to degenerative changes and loss of elasticity in the large arterial blood vessels.

The age-related rise in blood pressure is seen in both men and women as is illustrated by data from the recent Health Survey for England.² Table 1 shows that the mean systolic blood pressure in men and women rose from 130 mm Hg and 121 mm Hg respectively in the 16-25 year age group to 152 mm Hg and 160 mm Hg, respectively in the 75 years and over age group. Similarly the mean diastolic blood pressure in men and women rose from 64 to 81 mm Hg and 64 to 80 mm Hg, respectively, between the same two age groups.

Similar trends with age have been demonstrated in the Scottish Heart Health Study³ and the MIDSPAN study,⁴ both of which used a narrower age range. The 1992 Glasgow MONICA survey also showed an effect of age on blood pressure in the age range 25-74 years.⁵ The Scottish Health Survey 1995,⁶ unlike the Survey for England, did not include age groups over 64 years and cannot be readily compared with the data from the Scottish Heart Health Study and the MONICA surveys because of the different methodology. However the Survey did show an increase in systolic and diastolic blood pressures with age in both men and women.

The rate of increase in diastolic pressure with age is less than that for systolic pressure. This leads to a gradual widening of the gap between systolic and diastolic with age, and to the phenomenon of 'isolated' increased systolic blood pressure.

In early life little difference exists between the sexes, but beginning in adolescence, men tend to have higher average systolic and diastolic pressures.⁷ In later life the difference between the sexes narrows and in the very elderly the difference in blood pressure between men and women may be reversed. These differences in blood pressure with age between men and women produce differences in the prevalence of hypertension between men and women by age.

FACTORS AFFECTING BLOOD PRESSURE

Many factors other than age and sex can influence the level of blood pressure for example race, socio-economic status, nutritional factors including salt and fat consumption, birth weight, fetal and infant nutrition, alcohol intake and

body mass index.⁸ These factors are important as they offer potential for non-pharmacological control of high blood pressure, however lifestyle change may be more difficult in the elderly.⁹ Little geographical difference in blood pressure can be demonstrated geographically within Scotland as seen in the results from the Scottish Heart Health Study.³ International variation in isolated systolic hypertension in the 60-69 year age group has been reported ranging from 1% in Israel to 24% in Norway.¹⁰ Ethnic variation in hypertension is noted in the United States, particularly between whites and blacks.¹¹

SECULAR TRENDS IN BLOOD PRESSURE

Evidence from several Western countries suggests that there is a decline in the population mean levels of blood pressure emerging. The only Scottish data on trends in population blood pressure levels come from the three Glasgow MONICA surveys. They show a fall in systolic blood pressure of about 5 mm Hg in men and about 6 mm Hg in women in all age groups from 25 to 65 years. The proportion of men and women who can be categorised as hypertensive has consequently fallen over this period.⁵

It is not clear why levels of blood pressure levels have been consistently falling in many countries. Trends are known to be present in fat, fruit and vegetable consumption but there is limited information on changes in salt consumption.¹² The downward secular trend in blood pressure cannot be accounted for by changes in body mass index as the secular trend in body mass index has been upward.

RISKS OF HIGH BLOOD PRESSURE

Raised levels of blood pressure are associated with increased risk of stroke, coronary heart disease, heart failure and renal failure. Both systolic and diastolic pressures are independent predictors of risk, and increasing pressures are associated with increased risk at all ages. Systolic and diastolic pressures are highly correlated, but statistical analysis suggests that systolic pressures may be better predictors of cardiovascular sequelae.¹³ The incidence of cardiovascular disease increases steeply with increasing levels of systolic and diastolic blood pressure across the age range. The relative risk of mortality in Framingham tends to be greater in younger than older hypertensives. However, at almost every level of systolic and diastolic blood pressure the absolute frequency of cardiovascular disease is considerably greater in older people.¹⁴

Reversing the risk of high blood pressure in the elderly by lowering pressures would achieve a greater benefit than in younger people. Some 30-60% of all cardiovascular disease in the elderly appears attributable to either mild or severe hypertension.¹⁵ No evidence is available of a cut-off point in the association between the level of blood pressure and risk, the risk increases with increasing level of both systolic and diastolic pressures.

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TABLE 1
Mean blood pressure (mm Hg) by age (years) - Health Survey for England.²

Years	16-25	25-34	35-44	45-54	55-64	65-74	75 & over
Systolic pressure							
Men	130	131	132	136	144	150	152
Women	121	122	125	132	143	154	160
Diastolic pressure							
Men	64	71	76	81	83	82	81
Women	64	68	71	75	77	79	80

TREATMENT OF HYPERTENSION IN THE ELDERLY

Systematic reviews, including meta-analyses of randomised controlled trials, have shown the effectiveness of drug treatment of hypertension in the elderly.¹⁶ The numbers needed to treat are much lower than for younger age groups, the morbidity and mortality benefits derived from the trials being greater for older than younger subjects.¹⁷ The benefits are highlighted in the Cochrane review.¹⁸

UNMET NEED OF HYPERTENSION IN THE ELDERLY

The levels of blood pressure influence the proportion of people who are identified as hypertensive. Different criteria are used to define hypertension depending on the purpose of the definition.¹⁹ Criteria for treatment depend on the balance between the risks and benefits of treatment. In epidemiological studies the World Health Organisation definition of diastolic pressure greater than 95 mm Hg or systolic pressure greater than 160 mm Hg or currently treated for hypertension is commonly used for the purpose of comparisons. Analysis in Scotland based on this approach has confirmed the rule of halves in the management of hypertension in Scotland in the age group 40-59 years.²⁰ This rule is that half of the hypertensive population is detected, half the detected are treated and half of the treated are adequately controlled.

The 1992 Glasgow MONICA survey⁵ included the age group 65-74 years which allow data on the frequency of hypertension in an older Scottish population to be examined. The results are summarised in Table 2.

These figures show that a very substantial proportion of the 65-74 age group can be classified as hypertensive

with about half already on treatment. The treatment status seems better in men than in women with fewer of the detected hypertensive men being untreated compared to women, and a higher percentage of treated men being adequately controlled. The treatment status of hypertension in the elderly in the United States is currently much better than this.²¹

DISCUSSION

Hypertension is common in the elderly in Western communities where blood pressure rises with increasing age. The evidence from Scottish data sets is consistent with this age-related trend and there is evidence of a secular trend in blood pressure levels in Scotland. The relative risk of morbidity and mortality associated with high blood pressure is greater in the younger age groups compared to the older age groups, however the absolute risk is much greater in the older populations. This greater absolute risk is reflected in the low numbers who need to be treated (some in single figures) to avoid cardiovascular events compared to the relatively high figures for the younger age groups. The implication of this is that it is highly efficacious to treat hypertension in healthy older people.

Data from the Scottish Heart Health Study for the age groups 40-59 years demonstrated the rule of halves where half the hypertensive population were undetected, half the detected were untreated, and half the treated were inadequately controlled. The MONICA data for the 65-74 year old group adds a new 'half' in that half of the population is hypertensive. In this older population, the control of hypertension is better in men and in women in contrast to the findings for the under 60 year olds.

The inadequate detection and treatment of hypertension in the elderly is a missed opportunity to achieve a significant reduction in cardiovascular morbidity and mortality in older populations. There is a current SIGN (Scottish Intercollegiate Guidelines Network) group working on this subject and it is hoped that this guideline will lead to dramatic improvements in the detection and treatment of hypertension in the elderly.

TABLE 2
Rule of halves in the age group 65-74 years - Glasgow MONICA Survey

	Percentage (%)	
	Men	Women
Normotensive	52.7	54.3
Hypertensive	47.3	45.7
Undetected hypertensive	23.2	18.8
Detected and untreated	2.0	5.8
Treated and uncontrolled	6.9	10.2
Adequately treated	15.3	10.8

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