

Varicose veins in a Finnish population aged 40-60

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Abstract

Study objective—To assess the prevalence and the extent of treatment of varicose veins in a Finnish population.

Design—A prevalence study in a defined cohort was performed by using a mailed questionnaire. The method's validity was tested in a random sample of 166 individuals who were studied clinically.

Subjects—In 1989 a questionnaire was mailed to every resident born in 1929, 1939, and 1949 who was living in Tampere, the second largest town in Finland. The eligible population comprised 3284 men and 3590 women.

Measurements and main results—The response rate was 75% in men and 86% in women. Both the sensitivity and specificity of the self assessed diagnosis were 0.92. The life time prevalence of varicose veins was 18% for men and 32% for women, with an increasing prevalence in relation to age. Twenty five per cent of the men and 41% of the women who reported varicose veins had received treatment.

Conclusions—Self reporting of varicose veins by mailed questionnaire was a relatively valid method. The prevalence of varicose veins was high in the population studied, and the disease is more common in women than men. Moreover, the prevalence increased with age. The results are comparable with other western populations. Preventive methods are needed because treatment alone seems to be inadequate in the control of varicose veins.

Because there are no extensive studies on the prevalence of varicose veins in Finland and in other Nordic countries, knowledge of their occurrence and determining factors is lacking. We therefore undertook a cross sectional study of the occurrence of varicose veins in a Finnish population.

Methods

All people born in 1929, 1939, and 1949 and resident in Tampere, a city in southern Finland with 171 307 inhabitants (in 1989), were identified from the National Population Registry in 1989, and their addresses were received from the same registry. These 3284 men and 3590 women formed the study population. In September 1989 they were sent a questionnaire in which they were asked to indicate if they had ever had varicose veins. Varicose veins were defined as "clearly visible, dilated, tortuous, and possibly prominent subcutaneous veins of the lower extremities" according to a definition used in other epidemiological surveys of varicose veins.^{7 12-14} By definition, telangiectasia were not taken as varicose veins. The severity of the varicose veins was not graded further. The subjects were also asked about any surgery or sclerotherapy treatment for varicose veins. An identical questionnaire was mailed one to two months later to those who had not responded to the first questionnaire.

The prevalence of varicose veins was defined as the proportion of subjects who reported having had varicose veins during their life time in relation to all respondents (lifetime prevalence). Unless otherwise stated, the reported proportions are the actual observed prevalences based on self reporting. Adjustments for non-response and misclassification were also attempted. The adjustment for the bias caused by non-response was approximated by extrapolating linearly the prevalence of the non-responding group from the proportional changes in the prevalences among the subgroups who responded to the first and reminder questionnaires. The effect of misclassification on the prevalence of varicose veins was adjusted for by using the formula:¹⁵

$$P^a = [P - (1 - Sp)] / [Se - (1 - Sp)]$$

where P^a is the adjusted prevalence, P observed prevalence based on self reporting, and Sp and Se the observed values for specificity and sensitivity of the self assessed diagnosis.

The accuracy of self assessed diagnosis was estimated in a blinded study of 166 randomly sampled respondents born in 1939. The self evaluations were compared with the clinical

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Varicose veins are a common disorder in western populations but the causes remain largely unknown. Raised venous pressure or a primary structural weakness in the vein wall have been considered essential in the pathogenesis of varicose veins.¹⁻³

The occurrence of varicose veins in populations varies. The data are mainly derived from cross sectional studies,⁴⁻⁸ but follow up studies have also been conducted.^{9 10} In these studies the prevalence of varicose veins in adults varied from 7 to 38% in men and from 14 to 51% in women.⁴⁻⁸ The two year incidence proportion of varicose veins was reported to be 39 per 1000 men and 52 per 1000 women (40-89 years of age).¹⁰ Varicose veins are associated with other symptoms in the legs¹¹ and they result in extensive need of treatment. Subsequently, operations for varicose veins cause a considerable burden to surgical departments.

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Table I Self assessed diagnosis of varicose veins (VV) compared with the assessment by the surgeon

Self assessed diagnosis	Diagnosis by the surgeon					
	No of men			No of women		
	VV	No. VV	All	VV	No. VV	All
VV	14	4	18	36	5	41
No. VV	1	54	55	3	49	52
All	15	58	73	39	54	93

evaluation by a surgeon (JL). The results are presented in table I. The specificity (95% confidence interval (CI)) of the self assessed diagnosis was 0.93 (0.83, 0.98) in men and 0.91 (0.80, 0.97) in women. Correspondingly, the sensitivity was 0.93 (0.68, 1.0) in men and 0.92 (0.79, 0.98) in women. The 95% CI for the observed sensitivity and specificity values were calculated by the "exact" binomial method using the computer program CIA.¹⁶

Results

Altogether 2467 men and 3101 women in the study population filled in and returned the questionnaire. Thus, the response rates were 75% in men and 86% in the women (table II). Eighty eight per cent of the participating men and 93% of the participating women responded to the first questionnaire.

Varicose veins were reported more often by women than by men. Altogether 2013 men (82%) and 1808 women (58%) reported that they had never had varicose veins or were uncertain of having had them. The prevalence of self assessed varicose veins increased with age in both genders, as shown in table III. Unilateral varicose veins were slightly more common (11% in men and 23% in women) than bilateral varicose veins (6% in men and 17% in women) and the finding was consistent in the three cohorts.

Treatment for varicosis was also more common in women. The proportions with a history of surgery or sclerotherapy treatment for varicose veins increased with age from 2 to 7% in men and 9 to 26% in women. The proportions of individuals who reported a history of treatment for varicosis out of all those reporting varicose veins were 25% in men and 41% in women (table IV). In consequence, the actual point prevalence proportions of self reported varicose veins at the time of the study in men were 11, 20, and 20% in the cohorts aged 40, 50, and 60 years respectively. In the women the corresponding prevalences were 27, 39, and 47%.

Table II Response rate in the three birth cohorts in relation to gender

Age (y)	Gender	Total population	Participation rate (%)
40	Male	1499	70.5
	Female	1489	85.2
50	Male	980	76.5
	Female	1060	88.0
60	Male	805	82.0
	Female	1041	86.4
Total		6874	81.0

Table III Self assessment of ever having varicose veins (VV); proportions of individuals (%) by age and gender

Self assessment	Gender and age (y)							
	Male				Female			
	40	50	60	All	40	50	60	All
Certain of having VV	12	24	23	18	31	45	54	42
Uncertain of VV	3	2	3	3	5	4	5	5
Definitely no VV	85	74	74	79	64	51	41	53
Total	100	100	100	100	100	100	100	100
(No participating)	(1057)	(750)	(660)	(2467)	(1268)	(933)	(900)	(3101)

The observed prevalences of varicose veins in the subpopulations who responded to the first and the repeated questionnaires differed only in men: the prevalences were substantially higher in those

Table IV Number (%) of individuals who reported having varicose veins (VV) ever and at time of the study and the reported history of treatment for varicose veins

	Male (n=2467)		Female (n=3101)	
	No	(%)	No	(%)
Reporting VV ever	454	(18)	1293	(42)
Reporting VV at time of the study	397	(16)	1126	(38)
Reporting treatment	112	(5)	535	(17)

who responded to the first questionnaire (13 v 7, 24 v 17%, and 24 v 7% in the 40, 50, and 60 year olds, respectively). In the women the prevalences in the corresponding ages were (the first v the second questionnaire) 31 v 28%, 45 v 50%, and 55 v 52%.

The observed original prevalences were adjusted for the effects of non-response. Furthermore, the observed prevalences were adjusted for the effects of misclassification by using the estimated specificity and sensitivity (Table V).

Table V Observed and adjusted prevalences (%) of varicose veins

	Gender and age (y)					
	Male			Female		
	40	50	60	40	50	60
Observed prevalence	12	24	23	31	45	54
Adjusted prevalence*	9	21	20	30	46	54
Adjusted prevalence†	3	16	15	25	45	54

* after adjusting for the effect of non-response; † after adjusting for the effects of both non-response and misclassification.

Discussion

Varicose veins are fairly common in Finland (which has a population of five million). According to original data from the National Agency for Welfare and Health, approximately 11 000 varicose vein operations are performed each year in general hospitals in Finland. No epidemiological data, however, on varicose veins in Finland have been published to date.

The study population was from an urban area in the south of Finland with a fairly homogenous ethnic composition. No published data exist about the potential differences in the prevalences of varicose veins in urban and rural parts of Finland.

The response rate in our study was high, especially in women. The occurrence of varicose veins in men seemed to be associated with response to the questionnaire. The questionnaire method used in this study proved to be fairly accurate in measuring the prevalence of clinically important varicose veins in a moderately large study population. The estimated specificity and sensitivity of the questionnaire method in identifying subjects with varicose veins were reasonably high. In some previous studies the accuracy of self reporting of chronic conditions (including varicose veins) has typically been lower.¹⁷ A similar specificity (85–95%) but a lower sensitivity (47–67%) was reported in an interview study in

Israel.⁶ In the present study, the adjustments for the effects of both selection (as a result of non-response) and misclassification yielded somewhat smaller prevalences than those based on self reporting among those who responded.

The prevalence of varicose veins was also comparable with the findings obtained from studies on other white populations. Apart from chance, the observed differences in the prevalences between this study and other studies may, for example, be due to differences in diagnostic criteria. In this study, the prevalence of varicose veins in women was 2.3 times that in men, and the finding was consistent with other reports showing prevalence ratios of 2.0,⁴ 2.8,⁶ and 1.3.^{8, 10}

In the study population the prevalence was lowest in the youngest cohort in both sexes. However, varicose veins may develop at any age after adolescence. The results of the Framingham Study from a population with the minimum age of 40 years have indicated that the incidence of varicose veins varies by age with the highest incidence rates being found in men aged 70–79 and in middle aged (40–49 years) women.¹⁰ Although our study did not include people older than 60 years, these results, especially for women, agree with those obtained in the Framingham Study.

Treatment for varicose veins was common in the older people but was infrequent among younger men. The proportion of treated cases clearly increased with age. The reasons for treatment or abstaining from treatment were not evaluated. Similarly, the pathophysiological extent of the varicose disease was unknown. Therefore, individuals with no treatment may have had the least severe form of varicosis. A history of previous treatment for varicose veins had no substantial effect on the actual occurrence of all forms of varicose veins at the time of the study, even though in Tampere, according to the hospital discharge records, the treatment rate for varicosis has exceeded the rate observed in the rest of the country.

A relatively high proportion (50 to 80%) of people had not been given any treatment for their varicose veins. In spite of this, the alleviating effects of the treatment on the symptoms or signs

of varicosis could still have been considerable in many of those treated individuals but it was not possible to evaluate this in our survey.

In conclusion, varicose veins are common in middle aged Finnish people and were reported especially often by women. When compared with other nationalities, varicose veins affect Finns to a similar extent. Curative treatment was possible in a minority of individuals with varicosis. Therefore, preventive measures could be beneficial and the main risk factors of varicosis need to be studied further.

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