Journal of Epidemiology and Community Health 1991; 45: 184–187

Chronic leg ulcers: an underestimated problem in primary health care among elderly patients

O Nelzén, D Bergqvist, A Lindhagen, T Hallböök

Abstract

***Study objective*—The aim was to establish leg ulcer point prevalence, basal patient characteristics, and level of caretaking.**

***Design*—The study was a postal cross sectional survey. The validity was ensured by examining a randomly selected sample of reported patients. Responding health care officials were asked to report all patients with an open wound below knee (including foot ulcer) which did not heal or was supposed to heal within a six week period after onset of ulceration. Response rate was 92%.**

***Setting*—Inpatient and outpatient care in hospitals, community health care, and private nursing homes within Skaraborg county, with a population of 270 800.**

***Participants*—827 individual patients were found with active leg ulcers, 526 women and 301 men.**

***Measurements and main results*—Age adjusted sex ratio of ulcer patients was 1:1·4 (M:F). The median age was 78 years for women and 76 for men; 700 patients (85%) were older than 64 years. The point prevalence for active leg ulcers was 3·0/1000 total population. District nurses provided care for 680 patients (82%), 106 (13%) were in hospital care, and 41 (5%) were managed by outpatient departments.**

***Conclusions*—There has been an underestimation of the leg ulcer problem among elderly patients, especially men. With an expected increasing number of elderly people it is important that this problem is recognised and measures taken to improve the primary care of these patients.**

Chronic ulceration of the leg and/or foot (leg ulcers) is still a major problem in modern health care. The community costs for the care of these patients are high. Epidemiological data are largely lacking as regards prevalence, patient characteristics, and aetiological panorama. Therefore it is not known whether or not our medical efforts have had any real impact upon the actual size of the problem. It is also unknown whether the increased number of elderly people in the western world has led to an increasing number of ulcer patients, which might be expected.

Until recent years reliable point prevalence estimates have not been published. In 1985 Callam *et al*[1] presented the results of a postal survey in two health board areas in Scotland, the "Lothian and Forth Valley Study", giving a point prevalence for active leg ulcers of 1·48/1000 population. They also showed that this was one of the main workload problems for primary health care. A similar study from England[2] gave a prevalence of 1·8/1000 population, excluding patients with isolated foot ulcers. It is unknown if these figures are valid for other European populations.

In discussion of leg ulcer prevalence, The Basel Study III[3] is often referred to. This study found a prevalence of 1% for active and healed ulcers, but was based on a highly selected and limited population of industry workers below retirement age, with a large predominance of males.

In Sweden, Gjöres[4] estimated the prevalence of active and healed leg ulcers as 6·4/1000 population older than 15 years. Through a retrospective analysis of medical records in Gothenburg, Andersson *et al*[5] estimated the point prevalence to be 2–4/1000 population.

In order to get reliable epidemiological data and to be able to validate the findings from Great Britain,[1,2] a similar population survey was performed in Skaraborg county, the "Skaraborg County Leg and Foot Ulcer Study". The study started in 1988 with the aim of defining the size of the problem in a Swedish population and of characterising the leg ulcer patient, the aetiological factors, and the ulcer history. This paper reports the first phase, the purpose of which was to establish point prevalence, basal patient characteristics, and level of caretaking.

Methods

Skaraborg county, in the south west of Sweden, comprises a defined mixed rural and urban population of about 270 800 persons with a well functioning community health service. The proportion of the population older than 64 years was 18·4% in 1987 (Statistiska Centralbyrån's official statistics December 31st, 1987). This compares with a mean of 17·7% in the total Swedish population.

Our purpose was to identify all patients receiving treatment for leg ulcers. Questionnaires were sent to all district nurses (also covering patients in old people's homes) and to nurses in general practitioners' offices. For patients in hospital care, questionnaires were sent out to all outpatient departments and wards where it was likely that leg ulcer patients were treated, including long stay hospitals. The respondents, usually nurses, were asked to identify all patients with chronic ulceration who came to their knowledge within the survey period.

Chronic ulceration was defined as: an open wound below the knee (including foot ulcers) which did not heal or was supposed to heal within a 6 week period after onset of ulceration.[6]

Department of Surgery, Kärnsjukhuset, S-54185 Skövde, Sweden
O Nelzén
A Lindhagen
T Hallböök
Department of Surgery, General Hospital, University of Lund, Malmö, Sweden
D Bergqvist

Correspondence to:
Dr Nelzén

Accepted for publication
August 1990

The data collection was carried out between January 25th and March 6th, 1988. In order to make the survey comprehensive efforts were made to obtain replies from non-responders by mean of personal visits and telephone calls. Reported patients were cross checked to avoid double registration.

Validation of the results was achieved by clinical assessment of a random sample of the patients. Reported patients were stratified according to community, and half of them were randomly selected and invited to a clinical examination. Details regarding the examination will be reported later.

Results

Replies were received from all district nurses' offices (n=67), outpatient departments (n=10), wards of general hospitals (n=31), and long stay hospitals (n=31). Nine of 11 private nursing homes responded, as did 19 of the nurses at 32 general practitioners' offices. Total response rate thus was 92%.

Table I Age and sex distribution among leg ulcer patients

	Number of patients		
Age (years)	*Men*	*Women*	*Total*
10–14	1		1
15–19	1		1
20–24		1	1
25–29	1	1	2
30–34	1	2	3
35–39	2	3	5
40–44	2	1	3
45–49	8	6	14
50–54	8	4	12
55–59	10	17	27
60–64	27	31	58
65–69	25	41	66
70–74	39	74	113
75–79	62	118	180
80–84	57	118	175
85–89	42	71	113
90–94	10	34	44
95–99	5	4	9
Total	301	526	827

Notifications on 1077 patients were received. After cross checking, 827 individual patients remained, 301 men and 526 women. Six hundred and forty patients (77%) were reported from only one source and the remaining 187 from 2–5 sources. Sex ratio (male:female) was 1:1·7 and age adjusted 1:1·4 (adjusted to total Skaraborg population by age). Age range was 13–98 years and 700 patients (85%) were older than 64 years. Median age was 77 years (for men 76, for women 78). Age and sex distribution for all patients is shown in fig 1 and table I.

Six hundred and eighty (82%) were known to district nurses, and of these, 515 were reported from district nurses only. Eighty two patients (10%) were in long stay hospitals, of whom 12 were also reported from an additional source (not district nurses). Sixty five patients (8%) were reported from general hospitals only—31 from outpatient departments, 24 from wards, and 10 from both wards and outpatient departments. Ninety three patients (11%) visited the dermatological outpatient department during the study period, of whom 78 also were provided care by district nurses. Among the primary providers of care, district nurses greatly predominated (fig 2).

Of the 721 outpatients, 680 (94%) were known to and taken care of mainly by district nurses. In addition 106 patients were admitted to hospital during the investigative period.

The point prevalence of active leg ulcers anywhere below the knee was 3·05/1000 population. Age and sex specific frequencies are shown in table II. The geographical variation of prevalence was noted to be 1·00–4·50/1000 population. The extreme values were noted in small municipalities with less than 10 000 inhabitants.

VALIDITY TEST

Of 415 patients invited to clinical examination, 382 accepted and fulfilled the inclusion criteria.

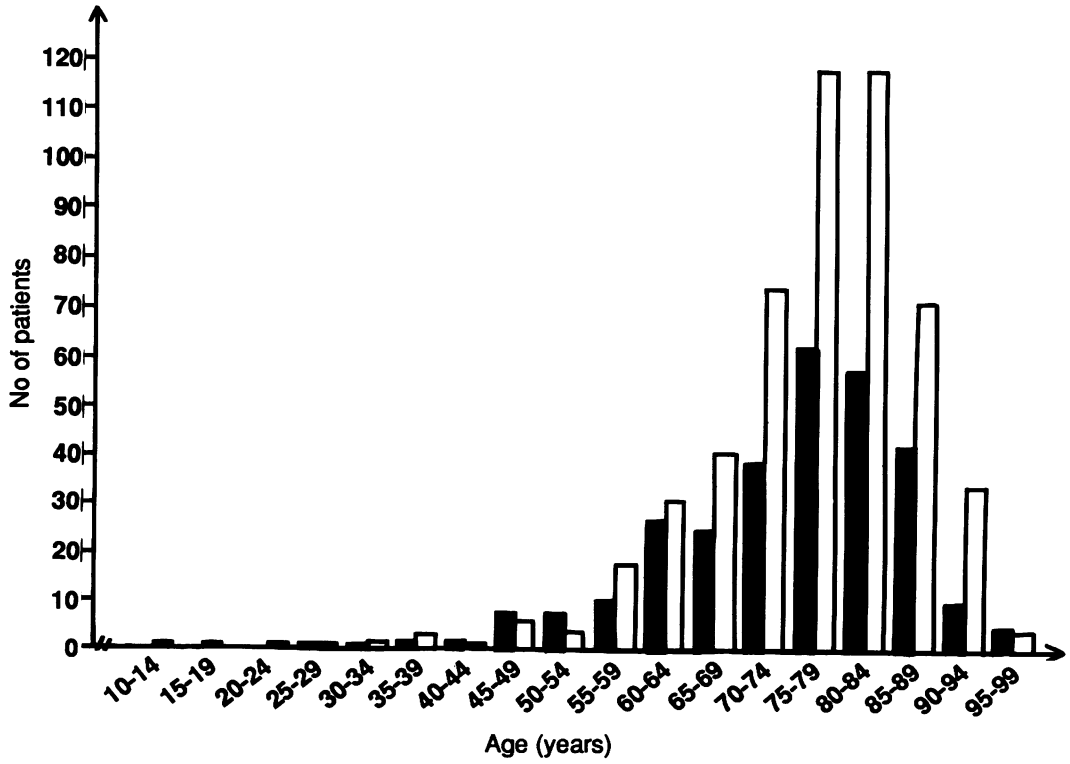

Figure 1 Age and sex distribution among leg ulcer patients: □ women ■ men (n=827)

Table II Distribution of age and sex specific prevalences among leg ulcer patients (n=827)

	Prevalence*	
Age (years)	*Men*	*Women*
<25	1:123 141	1:43 787
25–34	1:8 721	1:5 496
35–44	1:5067	1:4788
45–54	1:929	1:1459
55–64	1:369	1:296
65–74	1:205	1:124
75–84	1:64	1:42
⩾85	1:30	1:29
Total	1:448	1:258

*Prevalences specific to age and sex were calculated using Statistiska Centralbyråns official statistics Dec 31, 1987.

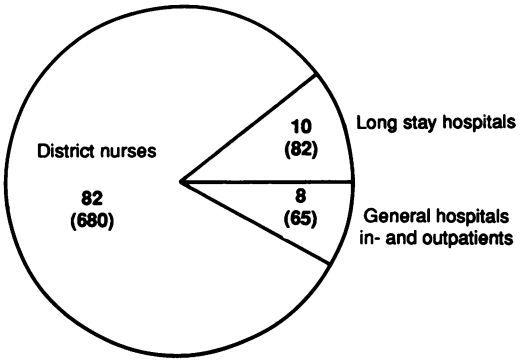

Figure 2 Primary providers of care for leg ulcer patients: level of health care reporting of patients, in percent (n=827). Number of patients in parentheses.

The exclusions were: 15 patients who died before the examination, 14 patients who refused to participate, and four patients who did not fulfil the inclusion criteria. Wrong inclusions were thus about 1% of all patients reported, which did not substantially alter the point prevalence (3·02/1000 population).

Discussion

In order to obtain comprehensive results in this type of cross sectional study it is essential to establish cooperation with practically all branches of health care. Except that there were only 59% replies from general practitioners' offices, the response rate was very high. Most of the patients with leg ulcers are seen only once by the general practitioner and thereafter by district nurses, working in close contact with a general practitioner. In most cases of non-responders the questionnaires were therefore handed over to the district nurses in the team, although they had also received a form of their own. In fact only 19 patients were reported from general practitioners, of whom 18 were reported from district nurses and one from a long stay hospital. It is therefore unlikely that any significant number of drop outs exists among these non-responders. From private nursing homes no patients were reported and therefore the two non-responders are unlikely to have any influence on the true prevalence.

This study shows twice as high a point prevalence of leg ulcers as in the similar study by Callam *et al*[1] in Scotland (3·0 *v* 1·5/1000 population). Patients with ulcers below the malleoli were included in both studies.[7] What might explain this difference? In both studies a geographical prevalence variation was noted. The extreme values in our study, however, were derived from municipalities with low populations. In some areas differences in age distribution were the cause. In larger municipalities the values in general were close to the overall prevalence rate, indicating chance as another explanation. A geographical difference between countries might exist, but it seems unlikely that the differences would be as large as observed. In our population, 18% of the inhabitants were older than 64 years. Unfortunately no figure was given in the Scottish study, but can be extrapolated to about 14%. This estimate is complicated by the fact that for 11% of the patients in that study age was unknown. The calculated age difference leads to a lower expected prevalence rate in Scotland, but cannot explain the whole difference. This is supported by a comparison of given age specific prevalence rates which reveal almost equal figures among patients younger than 65 years, but among retired patients the figures were lower in Scotland, especially among elderly men. This difference might be a true one or might indicate drop outs in the Scottish study among retired patients. The latter is supported by the results from Cornwall *et al*[2] with age specific prevalence rates comparable to our findings, if the data are corrected so as not to include foot ulcer patients.

An overestimation of point prevalence in our study seems unlikely, since it was taken over a relatively narrow period of time and our rate corresponds well with the retrospective estimate made by Andersson *et al*.[5]

This study is the first epidemiological survey with reliable information on age distribution among leg ulcer patients. In the Scottish study information on age was missing in 11% of reported patients. Our findings support the view that age is the most important risk factor,[2] but a substantial number of patients below retirement age also exists.[1]

One problem of uncertain size is patients with leg ulcers not known to the health care system. To address this problem we are currently doing a population questionnaire.

The sex ratio seems to vary between various studies. Callam *et al*[1] found the sex ratio to be 1:2·8 (M:F) and Cornwall *et al*[2] 1:2·2. The female dominance was less obvious in a Czech study from 1961,[8] at 1:1·5, and in our own investigation, particularly when age adjusted, when the ratio was 1:1·4.

Since a fairly short survey period was used the number of patients taken care of in cooperation between primary health care and outpatient departments has probably been underestimated. This might be indicated by the high number of patients who visited the dermatological outpatient department and also received care provided by district nurses. However, there is no doubt that most of the workload falls on primary health care and especially district nurses, supporting the findings in previous reports.[1 2] We assumed that those who reported the patients were in general also taking care of their leg ulcers. When patients were reported from district nurses and other sources as well, we considered the district nurse to be the primary provider of care. In fact 94% of the patients not in hospital stay were known to and taken care of by district nurses.

The problem of leg ulcers, especially among elderly patients, has probably been underestimated. The expected increase in the

number of elderly people in the years to come might lead to an increasing problem with enhanced workload, especially for primary health care. It is important that the leg ulcer problem is recognised and that measures are taken in order to improve the caretaking of these patients.

This study has indicated the size of the problem and forms the basis for an analysis of aetiological factors, a correct diagnosis being the prerequisite for optimal treatment.

We should like to thank all district nurses, nurses and assisting nurses concerned in the county for their assistance. We also thank Mrs Ingvor Fransson, our research assistant, for help with data handling.

1 Callam MJ, Harper DR, Dale JJ, Ruckley CV. Chronic ulceration of the leg. Extent of the problem and provision of care. *BMJ* 1985; **290**: 1855–6.
2 Cornwall JV, Doré CJ, Lewis JD. Leg ulcers: epidemiology and aetiology. *Br J Surg* 1986; **73**: 693–6.
3 Widmer LK. *Peripheral venous disorders; prevalence and sociomedical importance*. Bern: Hans Huber, 1978: 43–50.
4 Gjöres JF. The incidence of venous thrombosis and its sequelae in certain districts of Sweden. *Acta Chir Scand* 1956; Suppl *206*.
5 Andersson E, Hansson C, Swanbeck G. Leg and foot ulcers: an epidemiological survey. *Acta Derm Venereol* 1984; **64**: 227–32.
6 Dale JJ, Callam MJ, Ruckley CV, Harper DR, Berrey PN. Chronic ulcers of the leg: a study of prevalence in a Scottish community. *Health Bull* 1983; **41**: 310–4.
7 Callam MJ, Harper DR, Dale JJ, Ruckley CV. Chronic ulcer of the leg: clinical history. *BMJ* 1987; **294**: 1389–91.
8 Bobek K, Cajzel L, Capelac V, Slaisova V, Opatznyk, Barcal R. Etude de la fréquence des maladies phlebologiques et de l'influence de quelque facteurs étiologiques. *Phlebologie* 1966; **19**: 217–30.