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A Demographic Survey of Leg and Foot Ulcer Patients in a Defined Population

CHRISTINA LINDHOLM[1], MATS BJELLERUP[1], OLE B CHRISTENSEN[1] and BENGT ZEDERFELDT[2]

Departments of [1]Dermatology and [2]Surgery, University of Lund, Malmö General Hospital, Malmö, Sweden

By means of a questionnaire sent to all medical units in Malmö, including primary care, homes for the elderly, and industrial health clinics, 275 patients with leg and foot ulcers were identified. With a population of 232,908 in Malmö, this corresponds to a prevalence of 0.12%, which is lower than reported by others. Since the response rate was high (88% total, Primary Care: 100%), the prevalence of 0.12% is, however, believed to be real and might be explained by the urban area investigated, with easy access to care and proximity to one somatic hospital. 50% of the patients with leg and foot ulcers were treated in Primary Care, and 30% of the leg ulcer patients were treated at the Department of Dermatology. 88% of leg and foot ulcer patients were over 75 years of age. Median age was 79.5 years, with 80 for women and 76.5 for men. In Primary Care the median age was 82. There was a predominance of women in the study population with an overall sex ratio of 3: 1. A higher proportion of patients living alone was found in Primary Care. The etiology of the ulcers was considered to be "unknown" or "other" or else no statement was given in 36% of the leg ulcer- and 22% of the foot ulcer patients. This might reflect an overall uncertainty about the underlying etiological cause. Medially and laterally located leg ulcers were reported equally often, but there was also a great proportion of wholly or partially circumferential ulcers. 76% of the foot ulcers were located on the toes. Overall duration of ulcers was 31.1 months for leg ulcers and 11.6 months for foot ulcers. The most persistent ulcers were treated at the Department of Dermatology (duration 43.7 months). The highest number of ulcers/patient was also found at the Department of Dermatology (2.7). Total number of ulcers per patient was 2.2 for leg ulcers and 1.8 for foot ulcers. ***Key words: Prevalence; Age and sex ratio; Etiology; Social background.***

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C. Lindholm, Department of Dermatology, University of Lund, Malmö General Hospital, S-214 01 Malmö, Sweden.

Leg ulcers inflict substantial suffering on the patient and reduce quality of life. Moreover the treatment of leg ulcers consumes a considerable portion of the health budget for a community. The annual cost for the treatment of a leg ulcer in Sweden has been calculated to about 25,000 SEK (1).

Ulcers of the lower limb seem to increase exponentially with age (2). With an expected relative increase in old people in the community the number of patients with leg ulcers can thus be expected to increase. Optimal ulcer treatment as well as good planning of health care for these patients is mandatory. A prerequisite for good planning is knowledge about all aspects of the problem.

The city of Malmö is suitable for epidemiological studies, since it consists of a well-defined area with only one somatic hospital and has often been used for such studies (3).

The principal aim of the study was to investigate patients with ulcers of the lower limb, with regard to prevalence, sex and age ratio, social situation as well as the level of care within the public health service. Interest was also focused on etiology, location, duration, and number of ulcers.

The nursing care of the patients was analysed and is presented in a separate paper (4).

MATERIAL AND METHODS

A questionnaire consisting of 14 questions concerning leg and foot ulcers was distributed to 128 units, including all hospital wards and out-patient clinics, all primary care clinics and all homes for the elderly in Malmö. The questionnaire was specially designed to be filled in by physicians or nurses. The study period was 6 weeks in March-April 1990. Prior to the distribution of the form, all head physicians and head nurses were informed by letter. A meeting with all nurses in primary care was also held. A pilot exercise to test the ease of the forms was carried out with fifty nurses, and gave rise to no difficulties. The study was approved by the medical *ethics committee* of the University of Lund.

Definition: Leg ulcers = chronic ulcers below the knee. Ulcers below the ankle, which did not involve higher structures, were registered as foot ulcers.

RESULTS

Response rate

113 out of 128 units responded, corresponding to an overall response rate of 88%. 100% of the primary care units, where the majority of patients were identified, responded. Non-responding units were found among clinics where no leg ulcer patients not registered elsewhere were expected to be found, e.g. Department of Opthalmology. Distribution of questionnaires, response rate, as well as units reporting presence of ulcers are shown in Table I. Out of 275 forms, 6 were filled in by physicians and the remaining 269 by nurses or assistants.

Prevalence

275 patients with chronic ulcers of the lower limb were identified after exclusion of double registered patients. In 257 there were complete data allowing full analysis. With a population of 232,908 (January 1, 1990) (5), this represents a prevalence of 0.12% in Malmö (95% confidence intervals: 0.12%–0.12%).

Table I. *Response rate (n = number of units approached)*

	n	Units responding	Units reporting occurrence of leg/foot ulcers
Department of Dermatology	1	1	1
Somato-short-term care, hospital wards	54	47	11
Primary care centres	11	11	11
Geriatric rehabilitation	11	10	7
Homes for the elderly	37	36	10
Private homes for the elderly	3	2	1
Psychogeriatric clinic	8	4	0
Group-living for elderly	3	2	1
Total	128	113	42
		88%	33%

Data on sex and age were given in 244 forms. The agespecific prevalence can be seen in Table II.

Sex and age

The overall sex ratio was 3: 1 (women: men). Sex ratio for leg ulcer patients in primary care was 6: 1 (women: men). In primary care, there was a significantly smaller proportion of men, compared with the general hospital wards and the Department of Dermatology.

88% of the patients were over 65 years of age and 80% over 70 years. 50% of the patients were found in the group 76–86 years of age. The median age of patients treated in primary care (82 years) was higher than in the other medical sectors. Age and sex distribution are shown in Tables II and III respectively.

Location of leg and foot ulcers

257/275 forms could be evaluated. The location of leg and foot ulcers is given in Table IV. In leg ulcer patients the distribution between a medial and a lateral location of the ulcers was equal. The most common foot ulcer location was on the toes.

Duration of ulcers and number of ulcers/patient

Ulcer duration and number of ulcers per patient is shown in Table V. Most patients with long ulcer duration and several ulcers were treated at the Department of Dermatology.

Etiology of leg and foot ulcers

257/275 forms could be evaluated. The etiology of ulcers as diagnosed and reported by nurses/assistants and physicians can be seen classified in Table VI. The predominant cause of foot ulcers was diabetes. Venous or mixed venous/arterial disease was the reported cause in 56% of the leg ulcer patients. In 22% of the foot ulcers and 36% of the leg ulcers the etiology was given as "unknown" or "other", or no answer was given.

Level of care of leg and foot ulcer patiens

46% of leg ulcer and 58% of foot ulcer patients were treated by primary care centers. The Department of Dermatology treated 31% of the leg ulcer patients and no foot ulcer patients. The remaining patients were treated in general hospital units and homes for the elderly (Table VII).

Social situation

A high proportion of patients in the primary care live alone may be of significance for the planning of the care of these patients. The majority of patients were employed in occupations demanding much standing and walking.

DISCUSSION

The prevalence of leg and foot ulcers reported in this study is low (0.12%), compared with the worldwide prevalence of 0.2% (7), the prevalence reported from Skaraborg county, Sweden, of 0.31% (6) and the prevalence in the city of Gothenburg, Sweden, of 0.32% (2). The differences may partly be explained by the different methodologies used. This study is, however, comparable with the Skaraborg study. The extensive questionnaire used in the present study could possibly have resulted in a lower response rate, but the response rate of 88%, with a 100% response rate in primary care, seems to contradict such an explanation.

The concentrated city of Malmö with easy access to one single somatic hospital probably promotes early care-seeking, resulting in shorter treatment periods and thus a lower point prevalence. The real prevalence of leg and foot ulcers may be higher than estimated in this type of study since self-care of leg ulcers

Table II. *Age-specific prevalence of leg and foot ulcer in Malmö*

	Inhabitants/age group	Leg and foot ulcer patients	Ulcer patients/ 1,000 inhabitants
30–34	16,049	2	0.3
35–39	15,385	3	0.5
40–44	15,509	1	0.2
45–49	14,219	5	0.7
50–54	12,679	6	0.8
55–59	12,807	7	0.9
60–64	13,832	7	1.0
65–69	14,738	17	2.5
70–74	12,389	26	3.2
75–79	10,548	49	5.2
>80	12,000	121	10.0
		$n = 244$	

Table III. *Sex ratio in 244 patients with leg and foot ulcers*

	Leg ulcer patients			Foot ulcer patients		
	Women	Men	Ratio	Women	Men	Ratio
Department of Dermatology	39	19	2: 1	–	–	–
General hospital wards/clinics	31	12	2.6: 1	19	4	4.8: 1
Primary care Clinics	70	12	5.8: 1	24	14	1.7: 1
Total	140	43	3.5: 1	43	18	3.3: 1

is common. Moreover, the rapid development of new ulcer dressings, the increased awareness of the importance of compression therapy of venous leg ulcers, as well as intensified education about wound healing might partly explain the lower prevalence found in this study than in studies performed some years ago.

The level of care within the health care system is noteworthy with primary care treating the majority of both foot and leg ulcers and the Department of Dermatology treating a large proportion of the leg ulcers but no foot ulcers. The predominance of women, especially in the leg-ulcer group, was particularly evident. In this study, the overall sex ratio was 3: 1, ranging from 5.8: 1 for leg ulcer patients in primary care, to 1.7: 1 for foot ulcer patients. Thus the proportion of women was greater and the median age was higher than in the Gothenburg study with its sex ratio of 1.7: 1 and median age of 73 years (2).

The high prevalence of patients with ulcers of the lower limb in the age-group over 80 years, representing ten patients/1000 inhabitants is important for future planning of ulcer care. At present 5.3% of the population in Malmö are above 80 years of age. In the year 2000 the prognosis predicts 2,000 more people in the age group over 80 (5). In the age-group 60–64 years the prevalence was one patient per 1000 inhabitants.

Table IV. *Ulcer location in 193 patients with leg ulcers and 64 patients with foot ulcers*

	Department of Dermatology	General hospital wards/ clinics	Primary care	Total
Leg ulcer patients				
Exclusively medial	18	7	25	50
Exclusively lateral	12	9	29	50
Wholly or partially circumferential	22	16	27	65
Back/heel	2	4	3	9
No answer	4	9	6	19
Foot ulcer patients				
Toe	–	29	19	49
Heel	–	13	5	18
Sole	–	9	6	15
Dorsal	–	10	6	16
Toe + heel	–	2	1	3

Approximately 13% of the patients treated in hospital wards clinics, and at the outpatient clinic of the Department of Dermatology were living alone. In primary care though, the proportion of patients living alone was 34%. This might be explained by the higher median age in this group (82 years), compared with the overall median age (79.5 years).

Analysis of previous occupation shows a dominance of manual work with much standing and walking, with shop assistants and manufacturing workers most frequently registered.

The etiology of the ulcers was given by 269 nurses/assistants and 6 physicians. In 56% of the patients with leg ulcers the cause of the ulcer was regarded as venous, or mixed venous/arterial. The answer "other", "unknown" or no answer in 36% of the leg ulcer and 22% of the foot ulcer patients was unexpectedly common. A probable explanation for the unexpectedly high frequence of "unknown" or "other" is that a large part of the questionnaires were filled in by nurses/assistants. This seems to indicate an overall uncertainty among nurses/assistants concerning the etiology of the ulcer, and implies a risk of inadequate treatment. Efforts should probably be made to re-evaluate the underlying disease in leg ulcer patients more carefully and regularly and to communicate the diagnosis to all medical staff.

The location of ulcers was also registered. In the leg ulcer patients, 50 were located medially, 50 laterally and 65 were wholly or partly circumferential. The predominant foot ulcer location was the toes (76% of the patients).

The leg ulcer patients had an average of 2.2 ulcers/patient, foot ulcer patients 1.8 ulcers/patient. The Department of Der-

Table V. *Number of ulcers/patient, and duration of ulcer (months) in 193 patients with leg ulcers and 64 patients with foot ulcers*

	No of ulcers/patient		Ulcer duration	
	Leg	Foot	Leg	Foot
Dept of Dermatology outpatient clinic	2.7	–	43.7	–
Hospital clinics, including homes for the elderly	2.2	1.9	13.3	4
Primary care	1.8	1.6	36.3	7.6
Total	2.23	1.75	31.1	11.6

Table VI. *Etiology in 257 patients with leg and foot ulcers (as reported by physicians and nurses/assistants)*

	Leg ulcers		Foot ulcers	
	n	%	*n*	%
Venous insufficiency	85	44	3	5
Arterial insufficiency	16	8	10	16
Mixed venous/arterial insufficiency	23	12	6	9
Diabetes	–	–	27	42
Trauma/pressure	–	–	4	6
Other/unknown	40	21	10	16
No answer	29	15	4	6
Total	193	100	64	100

matology treated the patients with the highest number of ulcers/patient (2.7). Ulcer duration was longer with leg ulcers (31.1 months) than with foot ulcers (11.6 months). The Department of Dermatology treated the leg ulcer patients with the longest ulcer duration (43.7 months)

Although the prevalence of leg ulcers in this study was low in comparison with other studies, the burden on the health care system is considerable and can be expected to increase. The health care system must be planned accordingly. Furthermore there seem to be reasons to improve the determination of ulcer etiology to ensure adequate treatment.

Table VII. *Level of care of 257 patients with leg and foot ulcers among the three major medical sectors*

	Number of leg ulcer patients	%	Number of foot ulcer patients	%
Department of Dermatology	59	31	–	–
General hospital clinics/wards	45	23	27	42
Primary care	89	46	37	58
Total	193	100	64	100

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