

Incontinence aids in Sweden: users and costs

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Objective To study age- and sex-specific use and costs of incontinence aids distributed free of charge in Sweden.

Subjects and methods The study was conducted in the county of Jämtland, Sweden (132 000 inhabitants). The use and cost of incontinence aids for people living in their homes and the total cost of incontinence aids for residents of special accommodation (e.g. nursing homes, homes for the elderly and sheltered housing) was obtained from a central database constructed for the purpose. Individual usage of incontinence aids by those in special accommodation was studied in two districts of Jämtland, representing 18% of the population.

Results Free incontinence products were used by 6.4% of all women and 2.4% of all men in the county. There was a sharp increase in usage from the age of 75 years. Of the users, 21% lived in special accommodation. If the data from Jämtland are extrapolated nationally, then 274 000 women and 93 000 men in

Sweden (total population 8.8 million) are using free incontinence products. The total cost of incontinence aids for Jämtland during 1999 was 15.4 million Swedish krona (SK), and those in special accommodation accounted for 46% of these costs. This corresponds to an estimated total cost in Sweden of \approx 925 million SK. Although 75% of the users were women, women only contributed 61% of the total costs. The mean annual cost of incontinence aids for an incontinent man was twice that of an incontinent woman. More than half of the costs were attributable to those aged \geq 80 years.

Conclusions The estimated national costs of free incontinence aids accounts for 0.5% of the total costs of Swedish healthcare, including the care and nursing of older and disabled people, and for 0.05% of the gross national product.

Keywords incontinence aids, prevalence, costs, nursing homes, aged, elderly

Introduction

Urinary incontinence is one of the most important health problems confronting modern society. Population studies [1–6] have shown that \approx 10% of all women and \approx 5% of all men have urinary incontinence. Age is one of the dominating risk factors [1,3,7] and in women aged \geq 70 years, $>$ 20% of the population is affected. Urinary incontinence may cause not only considerable personal suffering and a reduction in quality of life [5,6,8,9] but is also of immense economic importance for the health service. The estimated annual cost of urinary incontinence in the USA in 1987 [10] and in Sweden in 1990 [11] accounted for 2% of the total healthcare costs. The use of incontinence aids contributed a major proportion of the reported costs.

The use of incontinence aids varies considerably even in studies of unselected groups of the total population. Reportedly, 6–50% of incontinent women and 5–28% of

incontinent men are users [4–6,12,13]. There are several possible explanations for this large variation. The definition of urinary incontinence varies in different studies and there is also a selection bias, as severe incontinence is often under-reported [14]. Therefore, it is not unreasonable to assume that the prevalence of the use of incontinence aids will vary in accordance with the underlying prevalence of urinary incontinence and its severity. The availability and cost of incontinence aids also varies considerably between different countries [15]. Among residents in nursing homes and homes for the elderly, 44–84% are incontinent and the use of incontinence aids, mainly absorbent products, is therefore high [12,16,17]. The use of indwelling catheters has decreased and their reported use in incontinent residents in nursing homes was 2–10% in Sweden [12], 15% in the UK [16] and 14% in Japan [17].

In Sweden incontinence aids are provided free of charge via the national healthcare system, by prescription. The aim of the present study was to evaluate the use and costs of free incontinence products in relation to age

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and sex in the county of Jämtland, one of the largest counties in Sweden, and to extrapolate the values obtained from this county to estimate the national usage and costs of free incontinence aids.

Subjects and methods

The study was conducted in the county of Jämtland, with a population of 132 000, comprising 1.5% of the total population of Sweden. The proportion of the population aged ≥ 65 years was 20% in the study area, compared with 17.4% for the whole of Sweden. The study was approved by the Ethical Review Board of Umeå University.

To assess men and women living at home, prescriptions in Jämtland were sent to a regional centre responsible for the distribution of incontinence aids to people living in their home; those for 1998 and 1999 issued for incontinence aids to such people were registered in a database. The sex, date of birth, district where resident, date of prescription and cost were registered. Thus it was possible to obtain the number of users in relation to age and sex and the individual annual cost for people living in their homes and who used free incontinence aids.

In Sweden the local councils are responsible for the care of older people, and 8% of the population aged ≥ 65 years live in 'special accommodation' [18]. This term covers nursing homes, homes for the elderly and sheltered housing. Orders for incontinence aids from these types of accommodation were sent collectively to the same regional centre and information for individuals was thus unavailable. To obtain this type of information a subsample comprising the nursing homes, homes for the elderly and sheltered housing in two of the eight districts of Jämtland was assessed during November 1999. These two districts comprised 18% of the population aged ≥ 65 years in the county. Information on sex and date of birth was obtained for each person who used incontinence products during this period. Corrections were made for those individuals (13%) who also had had incontinence aids prescribed in their homes for part of the same year. The number of users in special accommodation for the county of Jämtland was estimated by extrapolating these data, based on the known age and sex distribution of the inhabitants in the county.

The cost of incontinence aids in men and women living in special accommodation was evaluated individually in one nursing home (57 incontinent residents) during 1 week in November 1999 and in another nursing home (23 incontinent residents), one home for the elderly (43 incontinent residents) and one sheltered accommodation (26 incontinent residents) during 1 week in the

spring of 2000. From the delivery data it was possible to obtain information on the type of incontinence aids and cost per prescriber.

Extrapolation of the values obtained from the county of Jämtland was used to estimate the number of incontinence aids users and the cost of incontinence aids nationally. The extrapolated values were adjusted for the age distribution of the county of Jämtland and the age distribution of Sweden. National statistics were used, including a population forecast for 2010, 2020 and 2030 [19]. The price of incontinence aids in the county of Jämtland and in Sweden as a whole did not change from 1999 to 2000. To determine if there were price differences within Sweden, the prices of five of the most commonly sold incontinence aids from different areas in Sweden were compared. All costs accounted in this report are exclusive of value-added tax; 100 Swedish krona (SK) was equivalent to £7.5 sterling or 11.5 Euro in the year of the study.

Results

During 1999, 3542 women (5.4% of the female population) and 1292 men (2.0% of the male population) living in their homes in the county of Jämtland used free incontinence aids, equivalent to 3.7% of the total population. The corresponding percentage during 1998 was 3.5%. The percentage distribution of the use of free incontinence aids in men and women living in their homes and grouped according to age is shown in Fig. 1.

Incontinence aids were used by 6.4% of all women resident in the county of Jämtland, i.e. those women living in their homes and in special accommodation, and use increased with age; the corresponding value for men was 2.4%. The percentage distribution of the use of free incontinence aids in men and women resident in the county of Jämtland 1999 grouped according to age and type of accommodation is shown in Fig. 2; of the users, 21% lived in special accommodation.

The number of men (93 000) and women (274 000) using incontinence aids in Sweden was estimated from an extrapolation of the values from Jämtland (Table 1). On 1 November 1999 there were 116 000 persons aged ≥ 65 years living in special accommodation in Sweden [18]. Thus, from the extrapolation, 76 500 (66%) of these would have been using incontinence aids.

The annual cost of incontinence aids for men and women living in their homes was 8.3 million SK in 1999. The mean annual costs for men and women living in the selected special accommodation were 7101 and 4782 SK, respectively; these costs correlated with sex but not with age. Based on the real costs for these four accommodations the estimated cost for the county of Jämtland was 7 115 083 SK. This value can be compared

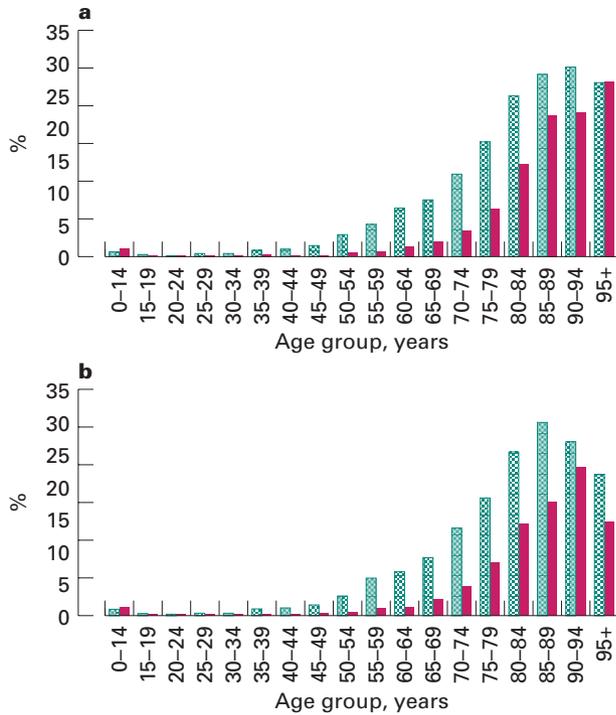


Fig. 1. The percentage distribution of the use of free incontinence aids for men (red, solid) and women (green, stippled) living in their own homes from the county of Jämtland in 1998 (a) and 1999 (b).

with the real cost of 7 148 085 SK for all special accommodation in Jämtland, as reported by the delivery depot; the difference in estimated and real costs was only 0.5%.

Thus the total cost of free incontinence aids in the county of Jämtland was 14.2 million SK in 1998 and 15.4 million SK in 1999 (Fig. 3). More than half of the costs were derived from people aged ≥ 80 years. Among people living in their homes, women constituted 73% of the users but accounted only for 57% of the costs. In special accommodation, 70% of the users were women and accounted for 61% of the costs. Among people living in their homes, the mean (95% CI) annual cost per incontinent man, at 2777 (2517–3037) SK, was twice that of an incontinent woman, at 1357 (1265–1450) SK ($P < 0.001$). In special accommodation the annual mean cost of incontinence aids for a man was 1.5 times higher than for an incontinent woman, at 7101 (6127–8074) vs 4782 (4131–5433) SK ($P < 0.001$). From delivery data to people living in their homes, it was not possible to analyse the reason for this difference. Among residents in special accommodation, men used more expensive types of pads than women (mean cost per pad 3.67 vs 2.97 SK, $P < 0.01$) but there was no difference in the number of pads used per 24 h (3.47 for men, 3.25 for women). During 1999 only very few incontinence pads were sold

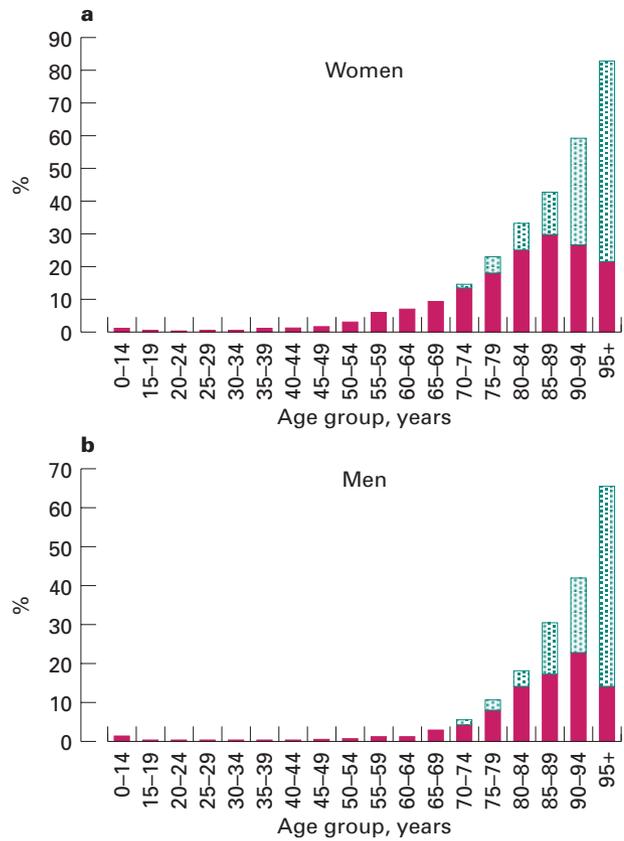


Fig. 2. The percentage distribution of the use of free incontinence aids for women and men resident in the county of Jämtland 1999, grouped according to age and type of accommodation (home, red solid; special accommodation, green stippled).

by the pharmacies in the county (26 packages, total cost 520 SK).

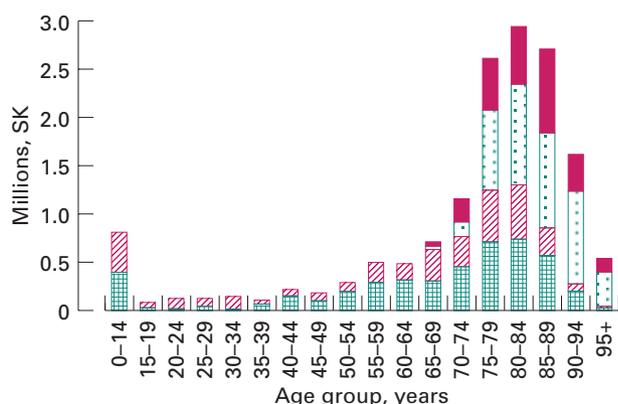
The estimated annual cost in Sweden for incontinence aids, based on an extrapolation from the data in Jämtland, was 925 million SK (Fig. 4). If the use and cost in relation to age and sex remains unchanged, then the cost will increase by 11% in 2010, 25% in 2020 and 48% in 2030 when demographic factors only are taken into account.

The relative cost of specific incontinence items is shown in Table 2; the dominant items were pads and underpants, and drip protection and disposable sheets, which accounted for $> 80\%$ of the total cost. The cost for catheters accounted for only 2.6% of the costs, and those used for intermittent catheterization were the greatest.

Nurses comprised 99% of the prescribers and physicians less $< 1\%$. The nurses prescribing incontinence aids were mainly district nurses and those in nursing and old peoples' homes, but midwives in primary care and nurses at hospital units and surgeries also prescribed incontinence aids. Prescriptions issued by urotherapists (nurses with specialist university training

Table 1 The estimated number of incontinence aids users in Sweden, extrapolated from the data obtained from the county of Jämtland

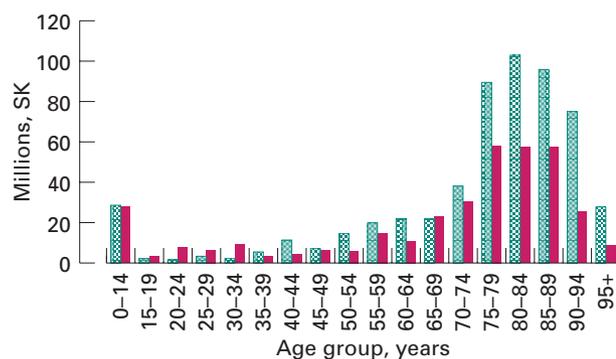
Age group	Women			Men		
	Total	Users, n (%) Own home	Special accommodation	Total	Users, n (%) Own home	Special accommodation
0–14	802424	7619 (0.9)	–	846038	11774 (1.4)	–
15–19	245632	731 (0.3)	–	258383	461 (0.2)	–
20–24	261354	570 (0.2)	–	271963	583 (0.2)	–
25–29	291090	1254 (0.4)	–	301793	818 (0.3)	–
30–34	320465	1391 (0.4)	–	337106	971 (0.3)	–
35–39	289442	3189 (1.1)	–	303804	736 (0.2)	–
40–44	287670	3668 (1.3)	–	297897	660 (0.2)	–
45–49	296446	4816 (1.6)	–	304473	1166 (0.4)	–
50–54	326018	10049 (3.1)	–	334628	1950 (0.6)	–
55–59	258368	15238 (5.9)	–	263940	3011 (1.1)	–
60–64	212286	14573 (6.9)	–	205446	2648 (1.3)	–
65–69	202733	18322 (9.0)	376 (0.2)	181734	4767 (2.6)	362 (0.2)
70–74	204048	27426 (13.4)	1935 (0.9)	169140	7763 (4.6)	1870 (1.1)
75–79	198816	35755 (18.0)	10006 (5.0)	148552	12102 (6.1)	4098 (2.8)
80–84	144502	35747 (24.7)	12469 (8.6)	90063	12433 (13.8)	4227 (4.7)
85–89	92258	27013 (29.3)	12598 (13.7)	45313	7897 (17.4)	6002 (13.2)
90–94	36727	8843 (24.1)	12974 (35.3)	13190	2592 (19.7)	2995 (22.7)
>95	8424	1472 (17.5)	5479 (65.0)	2156	316 (14.6)	1104 (51.2)
Total	4478703	217677	55837	4375619	72627	20658

**Fig. 3.** Total costs of incontinence aids for the county of Jämtland in 1999, grouped according to age, sex (men, red; women, green) and type of accommodation (home, men, red hatched, women, green checked; special accommodation, men, red solid, women, green stippled).

in the management of urinary incontinence) accounted for 9% of the costs.

Discussion

The present study shows that there were an estimated 367 000 users of incontinence aids in Sweden and that the estimated total annual cost for incontinence aids was 925 million SK. About half of the costs of incontinence aids were attributable to those aged ≥ 80 years, although

**Fig. 4.** The estimated total costs of incontinence aids in Sweden, grouped according to age and sex (men, red; women, green stippled).**Table 2** The percentage costs for the various types of incontinence aids used by men and women in the county of Jämtland in 1999, when the total cost amounted to 15.4 million SK

Item	Relative cost, %
Pads and disposable pants	58.0
Disposable sheets	14.2
Catheters for CISC	12.3
Drip protection	7.9
Urine collections bags, bottles, sheaths	5.0
Indwelling catheters	0.4
Miscellaneous	2.2

they comprised only 20% of the users. Three-quarters of the users were women, but the annual cost of incontinence aids was almost twice as high for an incontinent man than for an incontinent woman. The net cost of healthcare in Sweden was 99 billion SK in 1999 [20] and the net cost of the care and nursing of older and disabled people was 75 billion SK [21]. The national annual cost of incontinence products therefore represents 0.5% of these costs and 0.05% of the gross national product. The costs of free incontinence aids can also be compared with the costs of other common health problems, e.g. the total national cost for antidepressant drugs in Sweden was 999 million SK and the total national cost for drugs, injection and test materials used in diabetes mellitus was 895 million SK in 1999.

In Sweden, 500 000 people have been estimated to have urinary incontinence [22] and it was previously reported that the use of incontinence aids is related to the severity and frequency of incontinence [23]. The 367 000 users of incontinence aids probably represent those with more severe or frequent incontinence among the 500 000 incontinent men and women in Sweden.

We consider that the present data are reliable as we have comprehensive data on the use and costs of incontinence aids from all people living in their homes, and the estimate of users in special accommodation was based on almost 20% of the population aged >65 years and resident in the county. In addition, the estimated costs for special accommodation based on individual costs from a subsample differed little from the real costs, available for the county as a whole. The sale of incontinence pads from pharmacies in the county during 1999, paid for by the patients, was negligible. However, in less severe cases of urinary incontinence, the use of panty liners and small menstrual pads may be appropriate, and we have no data for this usage.

We suggest that the extrapolated values for the national prevalence of use and costs for Sweden are reliable. The estimated number of users in Sweden was extrapolated considering the demographic differences between Jämtland and Sweden. In Jämtland the transportation costs were high (8%) as a result of geography, but they were included in the total cost. The comparison of prices of incontinence aids within Sweden varied by 85–110% from the prices in Jämtland. However, Jämtland is unique in that it has a well-developed system for purchasing and distributing incontinence products, in educating prescribers and in reassessing prescriptions every third month. In this context, when this new system was introduced the costs of incontinence products decreased by 23%. Thus, the total costs for Sweden may have been underestimated, as the Jämtland may have lower costs than other counties.

Previous studies on the use and costs of incontinence aids have been based on: (i) estimates of prevalence and usage of pads [10]; (ii) available national data [11]; (iii) selected groups [24] or; (iv) epidemiological surveys based on questionnaires or interviews [12]. People with severe incontinence will be under-represented in epidemiological surveys as they are unable to participate to the same extent, because they often have accompanying debilitating morbidity [14]. Studies based on patient's estimates of pad usage tend to overestimate it [24,25]. A Norwegian study reported on the use of incontinence aids among community-dwelling women and found a prevalence of 2.4%, compared with 5.4% among the community-dwelling women in the present study. The relationship between use and age was very similar in the two studies, but the use in Sweden was more than double that in Norway. A possible explanation for this may be a real increase in use during the 7 years since the Norwegian study, and differences in availability of free incontinence aids in the two countries. In an Italian study [27] based on interviews with 2767 community-dwelling women aged >40 years during 1997, at least 5.9% used diapers/pads. The mean annual cost per patient for diapers/pads was 337 117 Lire (\approx 1525 SK), which is close to the annual cost of 1357 SK in the present population.

Healthcare policies for incontinence products in European countries vary and were described in a Belgian report [15]. Up to 1996, all incontinence aids in Sweden were distributed by the state-owned pharmacy system and national data on the cost of incontinence products was available up to 1996, when the total cost was 830 million SK. If the national value from 1996 is used and adjusted according to the increase in the consumer-price index, then the national costs for 1999 should have been 837 million SK. The national cost estimated in the present study was 925 million SK, indicating an 11% increase in costs above those expected as a result of an increase in consumer prices between 1996 and 1999. The most probable explanation for this increase is the increasing number of elderly in society and the increased awareness of the availability of free incontinence aids. The population in Sweden aged \geq 65 years is expected to increase by 37% from 1999 to 2030, and this demographic change will, from the present results, entail a 50% increase in the costs of incontinence aids. A similar development is expected in most European countries, and in the USA the increase will, for demographic reasons, be even more pronounced. Different training programmes (e.g. toilet training, prompted voiding, bladder training, etc.) are effective even in the elderly [22] and, if incontinence aids are needed, it is important to adapt them to leakage volumes [28]. The magnitude of this problem among the elderly is

a challenge for nurses and doctors in primary healthcare. Any improvement in the quality of care and management of urinary incontinence may improve well-being and reduce costs.

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Abbreviations: SK, Swedish krona.