

Urinary incontinence and use of pads - clinical features and need for help in homecare at 11 sites in Europe

Sørbye LW, Finne-Soveri H, Ljunggren G, Topinkova E, Garms-Homolova V, Jensdóttir AB, Bernabei R for AD-HOC Project Research Group. ¹

Abstract

The aim of this study was to obtain evidenced-based knowledge about older persons in home care; we conducted a population-based study at 11 sites in Europe (2001/2002). This article is going to focus on urinary incontinence and need for help in homecare.

Methods: A sample of 4,010 respondents 65 years or older were assessed by the Resident Assessment Instrument for Home Care. Urinary incontinence was defined as leakage once a week or more including use of catheters.

Results: A total of 1478 individuals had urinary incontinence, 45 % of men and 47 % women. The use of pads ran from 29 % to 52 % between the sites.

The associates of urinary incontinence were: moderate or severe cognitive impairment, dependency in toileting and other activity of daily living compared to less impaired; urinary infections, obesity and faecal incontinence. Caregivers to persons with urinary incontinence reported burden or stress more often than carers to Non-urinary incontinence individuals (OR=2.2, 95 % CI 1.8-2.7).

Conclusions: To enable older people with incontinence to stay at home with a better quality of life, they have to get caring assistance during toileting on a regular basis.

Key words: home care, incontinence, use of pads, formal and informal carer, cross-national, RAI-HC

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Introduction

Most of the older people who suffer from chronic diseases and co-morbidities want to stay in their homes. Consequently, home care for the elderly is a growing service in European countries. The AD HOC –Study (the Aged in Home Care) was designed to collect comprehensive data on clients of home care services in 11 European countries. A standardized assessment was conducted to make a cross-national comparison possible. The results revealed a high prevalence of urinary incontinence (UI) and an intense use of pads by the incontinent individuals. In the area of home care services, other interventions for the management of UI are not as common as the utilization of pads.

Several studies document that UI affects older persons much more than any other population. UI is a significant cause of disability and dependency.¹⁻² Bioko³ used the concept “the diaper-wearing population” to describe the elderly as early as in 1997, and intervention studies have described how to reduce the indiscriminate use of absorbent pads and garments.⁴⁻⁶ Gotoh, Yoshikawa, Hattori et al. reported on the prevalence of incontinence products use in home care.⁷ We found three cross-national comparisons of use of pads⁸⁻¹⁰, but neither of them differentiated between the home care clients and other population groups.

In this paper, various incontinence products such as briefs, pads, and diapers will be collectively referred to as “pads” or “protective garments”.

Various aspects of UI are described in the literature. First, the reported prevalence of UI varies in different studies. Baumann et al. stated that in the United States, 15 % of the aged living at home and 50 % of those who were homebound or who received formal services were incontinent.¹¹ Data collected on clients admitted to home care programs has shown that UI was recorded in 51 % of the clients.¹² A community study based on medical records and on the documentation of care delivered to the population reported UI in 26 % of men and 48 % of women.¹³ Klausner and Vapnek reviewed the geriatric and urological literature and documented a prevalence of UI in 15 % to 30 % of the elderly individuals in the community, but commented that the problem was underreported.¹⁴

A second aspect of UI involves perceptions and attitudes. Incontinence is often incorrectly attributed to normal aging.¹⁵⁻¹⁶ The medical consultation and treatment rates are lower for older people who suffer from UI, than for the younger ones.¹⁷ Monz and colleagues found that younger women who sought treatment were bothered more by their symptoms than older women with similar symptoms. Additionally, the possibilities for exercise were moderately to completely limited by the episodes of incontinence.¹⁸ The same was true with regards to activities with their family, traveling, or going on vacation

UI can be caused by a number of factors. Potentially remediable causes of UI are morbidities, such as stroke¹⁹, Alzheimer's disease, or other dementias²⁰, Parkinson's disease²¹, urinary tract infection²²⁻²³, heart failure²⁴ and diabetes.²⁵ Extreme obesity²⁶⁻²⁷, polypharmacy and the use of anti-psychotics and hypnotics²⁸ are other conditions associated with UI in frail older people. Any change in health status could lead to an improvement in bladder control.¹²

UI may have serious impact also on the informal caregivers, and higher levels of stress were reported by spouses.²⁹ Qualified staff in home care and access to appropriate health services are important variables for coping with UI.³⁰⁻³³

The aims of this contribution are to examine the prevalence of UI in the population of home care users at 11 sites in Europe, particularly with relation to gender and age;

- the individual's characteristics associated with UI
- the prevalence of the use of urinary catheter and of incontinence pads as well as of the need for assistance while using a toilet;

- the relationship between the distribution of UI and the use of formal services, informal help, and caregiver burden.

The paper does not differentiate between different forms of UI.

The paper investigates three basic hypotheses:

- The prevalence of pad use is positively associated with physical impairment and dependency when using a toilet.
- HC-clients suffering from UI need a significantly greater amount of formal care as well as of informal help.
- The occurrence of caregiver stress is more probable in those caregivers who take care of incontinent persons.

Method

Sample

A cross-sectional study, titled the AdHOC study, conducted in 2001/02 is the basis of this contribution. It focused on the elderly home care clients in six central and south European regions in the Czech Republic, France, Germany, Italy, the Netherlands, and the United Kingdom, as well as in five Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden) (Figure 1).

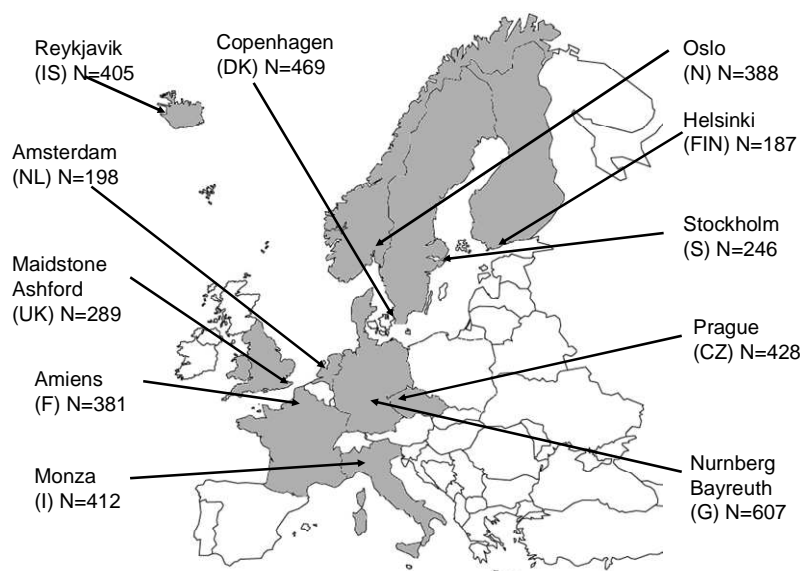


Figure 1. Sites in 11 European countries (Adapted after Carpenter³⁴)

The national partners selected a random sample of service users aged 65 years or above from “typical” home care agencies, providing home care and home nursing to the population of an urban area, N= 4010. Ethical approval for the study was obtained at all sites according to national regulations. Participants were assured of the confidentiality of the study information and asked to give informed consent. Further characteristics of the AdHOC sample and other details of the study are published elsewhere.³⁴

Measurement

The clients were assessed with the international Resident Assessment Instrument for Home Care (RAI-HC), version 2.0. InterRAI instruments all share a common language, that is, they refer to the same clinical concept in the same way across instruments (www.interrai.org.)

The RAI-HC consists of about 300 items (functional status, cognitive abilities, morbidity and symptoms, social contacts, communication, utilization of selected services and treatments, informal help, and socio-demographic background), and is reliable and validated.³⁵ Only a small part of this comprehensive information deals with Urinary incontinence (UI) and its management through the application of incontinence products. The assessors were trained to use the instrument and the assessments took place in the client’s home.³⁶

To compile information on the state of the research, and to compare the AD HOC - results with findings of other studies, a search of literature was carried out, using Medline and CINAHL (2001-2006). The key words were: urinary or bladder incontinence in home care, diapers, pads, briefs, incontinence products, urinary devices, cross-sectional, cross-national, and 65 years or older. Additional articles (independent of the time frame mentioned) were identified by related links and from references used by other authors).

Study Variables and definitions extracted from the RAI-HC

Urinary incontinence (UI): In this contribution, UI is defined as the presence of at least one episode of urinary leakage per week. In addition, clients using indwelling, intermittent, or condom catheters, are classified as incontinent because most of them would have been incontinent of urine, if the catheter were not in place.³⁷⁻³⁹ Faecal incontinence (FI) was defined as being incontinent of stool one or more times over the last seven days. The findings on FI will be subject of another paper. Information on the costs for protective garments was

collected from each country, if clients have to pay for pads, or if the and expenses are reimbursed by insurance, or a public institution.

Cognitive and physical functioning

Measures of cognitive and physical function in the form of validated scales are embedded in the RAI instruments.⁴⁰⁻⁴¹ The Cognitive Performance Scale (CPS) is used to determine the degree of individuals' ability to make everyday decisions. It is based on the following items: memory, cognitive skills of daily decision making, expressive communication, and ability to eat. The scale is hierarchical, starting from "0", indicating the absence of cognitive impairment, to "6", meaning "totally cognitively impaired." Starting from 3 (cut point); the person suffers a cognitive impairment. Scores of 4 to 6 indicate severe to complete cognitive impairment and is equivalent to a score of 15 or less on the Mini Mental State Examination (MMSE).⁴¹

For physical functioning, we used two hierarchical scales for Activity of Daily Living (ADL) (0-8) and Instrumental Activity of Daily Living (IADL) (0-7) measuring dependency in different functions. A higher score means dependency in more functions. ADL assessed: mobility in bed, transfer, eating, toilet use, personal hygiene, dressing upper and lower body, locomotion inside and outside home, and bathing. A cut-point of 3 was used to designate clients having moderate or severe physical impairment.⁴² IADL assessed: meal preparation, housework, managing medication, managing finance, phone use, shopping and transport; primary modes of locomotion indoors and outdoors³⁵ For this measure, "4" has been selected as the cut-point because this score corresponds with the median of the activities of the study sample.

Factors Contributing to UI

All factors associated with the occurrence of UI were identified on the basis of the RAI HC. First, extreme obesity (obesity that interferes with normal activities of the individual), polypharmacy (use of 6 or more medications), and the use of anti-psychotics and hypnotics (other medications were not specified in this analyzes) were taken into account. The RAI HC includes information on a number of diagnoses like stroke, Parkinson's disease, Alzheimer's disease, or other dementias, urinary tract infection, heart failure, fractures, arthritis, and diabetes. Symptoms, such as diarrhea and oedema in the last two of three days and falls during the past 90 days are documented. Data were also collected on conditions or diseases that destabilized cognition, mood, or behavioral patterns. Additionally, information on

whether the participant was “experiencing a flare-up of a recurrent or chronic problem” has been taken into consideration.

Utilization of Services and care

Utilization was operationally defined as hospitalization in the last 90 days (overnight stay), emergency unit visit (no over night stay), or emergency home visit (unscheduled nurse’s and/or physician’s visit). *Formal help* was operationalized as care provided by formal home-care professionals for one or more days during the last week. “Visiting –nurse” means care provided by the registered nurse. “Home carer” means care provided by home-care staff, e. g. nursing assistant or a person providing basic personal care particularly in the area of elementary ADL functions). “*Informal help*” was defined as assistance provided by family/neighbors/ friends during the past week. The sample was divided into two groups. One group contained persons receiving informal help three or more hours during all five weekdays, or one or more hours during the two days of a weekend. Subjects who received less help were classified as having “little or no help”.

Caregiver burden was defined as the caregiver reporting that he/she (1) was unable to continue caring for the client; (2) was not satisfied with family support; and/or (3) had feelings of distress, anger or depression.

Statistical analyses

The current analyses were performed using SPSS software version 13 (www.spss.com). The relationship between UI and conditions mentioned above was given in Odd Ratio (OR) and evaluated by a Pearson chi-square analysis (table 3-5). An Odd Ratio (OR) of 1 indicates that the condition or event under study is equally likely in both patients with UI and those without UI. An Odd Ratio greater than 1 indicates that the condition or event is more likely in the patients with UI. Conditions significantly associated with UI during bivariate analysis ($p < .05$) were entered into a forward logistic regression to construct a multivariable model with UI as the dependent variable. Results from the regression model are reported as odd ratio (OR) with 95 % confidence intervals (CI). The service and care utilization variables were excluded from the regression analysis, because in this analysis, UI could act both as an independent and as a dependent variable. When analyzing the association between the “need of assistance when using a toilet or /and pads” and “UI accompanied by a cognitive impairment”, the five Nordic countries, the Netherlands, and the Czech Republic were

analyzed together as a one group because the prevalence of the dependency/impairment was so low that a separate analysis in each of these sites seemed impossible. The similarity of these seven countries was already documented in an earlier publication on the AD HOC results.³⁴

RESULTS

Sample characteristics

There were 1036 (26 %) men and 2974 (74 %) women participating. The mean age was 82.3 years (SD = 7.3); men were on average 80.9 Years old (SD = 7.5) and women 82.8 years (SD=7.2). The entire sample included 61 % of individuals who lived alone (13 % clients lived alone in Italy; the corresponding figure in Finland was 83 %).

Table 1 Characteristics of sites in 11 countries, functional and clinical parameters

* For male: 40 % lived alone, for female 68 %. **Urinary incontinence included different type of catheter. F= free access to pads P= partly coverage of cost

Characteristics	Czech Republic N=428	Denmark N=469	Finland N=187	France N=381	Germany N=607	Iceland N= 405	Italy N=412	NL N=198	Norway N=388	Sweden N=246	UK N=289	Total N= 4010
Female	79 %	79 %	81 %	72 %	75 %	74 %	63 %	77 %	72 %	80 %	74 %	74 %
Age, mean (± SD)												
Men	80.3 (7.6)	82.1 (7.1)	78.3 (8.3)	82.0 (7.4)	80.1 (8.2)	80.1 (7.1)	78.2 (7.4)	81.8 (6.5)	83.2 (6.2)	82.3 (7.1)	81.4 (7.5)	80.9 (7.5)
Female	81.9 (6.8)	85.0 (6.4)	82.1 (7.3)	83.0 (8.0)	81.9 (7.6)	82.1 (6.4)	81.9 (8.0)	80.3 (6.7)	84.2 (6.3)	84.7 (6.7)	83.0 (7.2)	82.8 (7.2)
Total	81.6 (7.0)	84.4 (6.8)	81.4 (7.6)	82.7 (7.9)	81.4 (7.8)	81.7 (6.6)	80.5 (8.0)	80.6 (6.6)	83.9 (6.3)	84.1 (6.8)	82.6 (3.3)	82.3 (7.3)
Live alone*	65 %	76 %	83 %	37 %	62 %	68 %	13 %	62 %	74 %	80 %	65 %	61 %
ADL dependency	8 %	7 %	4 %	71 %	34 %	5 %	71 %	7 %	12 %	5 %	24 %	25 %
IADL dependency	65 %	32 %	37 %	78 %	68 %	40 %	82 %	30 %	40 %	23 %	62 %	54 %
CPS moderate/severe	3 %	5 %	1 %	34 %	13 %	2 %	25 %	5 %	3 %	2 %	11 %	11 %
Urinary incontinence**	42 %	43 %	43 %	62 %	46 %	39 %	63 %	50 %	37 %	48 %	39 %	47 %
Use of pads ^{F, P}	29 % ^P	45 % ^F	33 % ^P	52 % ^P	40 % ^P	31 % ^P	45 % ^F	37 % ^F	29 % ^F	42 % ^F	46 % ^F	39 %

Activities of Daily Living.: personal hygiene, toilet use, locomotion, and late eating scale - eight different functions. Moderate to severe dependency if need for assistance in 4-8 of these functions.

Instrumental Activities of Daily: meal preparation, medication management and phone use – seven different functions. Moderate to severe dependency if need for assistance in 5-7 of these functions.

F: full coverage by health insurance P: Partly covered or all paid by user

The prevalence of UI amounted to 47 % and that of pad use to 39 % of the whole sample; but the variation across the 11 countries was enormous. In Norway, 37 % suffered from UI, whereas in Italy, the figure was to 63 %. At the same time, the frequency of the use of pads differed too: from 29 % (in the Czech Republic and Norway) to 52 % (in France) (Table1).

Prevalence of UI, use of pads, and the need for toileting assistance

Table 2 presents the prevalence of UI and the frequency of the application of catheters for the whole sample, as well as for gender and age groups. Forty percent of women suffered from UI, with the highest prevalence rate of 44% among women of 75 to 84 years old. The prevalence of UI with leakage at least once a week amounted to 38 % (N=1513); 9% (N=362) of the participants had an indwelling, intermittent, or condom catheter. The prevalence of such devices was twice as high among male participants (15 %) as among females (7 %).

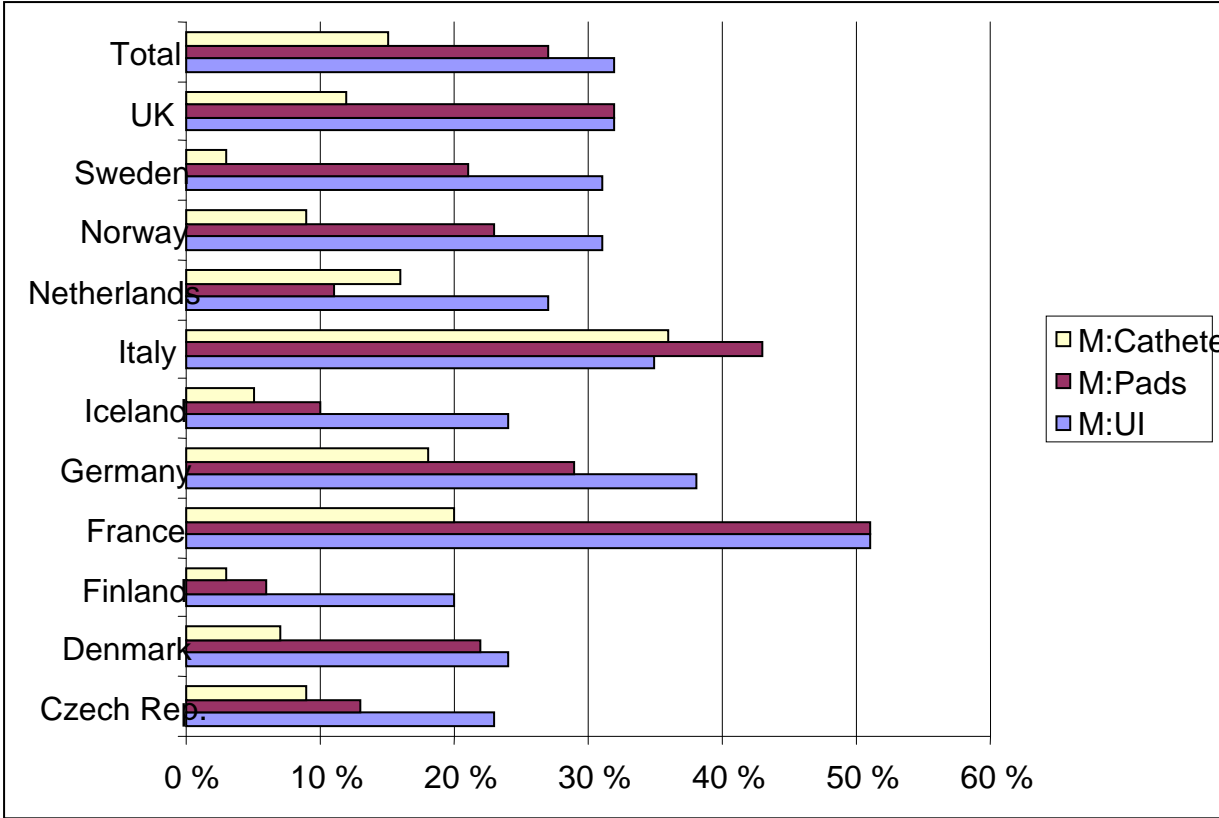
Table 2. Urinary incontinence and catheter use by gender and age group

	Continent n (%)	Catheter*	Urinary incontinence once a week or more	Total n (%)
Male				
65-74	149 (62)	25 (10)	66 (28)	240 (23)
75-84	269 (57)	74 (16)	132 (28)	475 (46)
85+	150 (47)	54 (17)	117 (36)	321 (31)
Total	568 (55)	153 (15)	315 (30)	1036 (100)
Female				
65-74	260 (58)	41 (9)	150 (33)	451 (15)
75-84	702 (55)	83 (6)	503 (39)	1288 (43)
85+	605 (49)	85 (7)	545 (44)	1235 (42)
Total	1567 (53)	209 (7)	1198 (40)	2974 (100)
Total	2135 (53)	362 (9)	1513 (38)	4010 (100)

*Indwelling, intermittent or condom catheter $n= 4.010$

Figure 2 compares the prevalence of UI, use of pads and of a catheters (indwelling, intermittent or condom) among male participants across the 11 participating countries.

Figure 2. Male: Urinary incontinence, use catheters and pads



The highest prevalence rates of UI as well as of pads were found in France (50.5 % for both), while the lowest prevalence rates occurred in Finland (20.0 % for UI and 5.7 % for pad use). The most frequent use of catheter was found in Italy (35.9 % of the males), the lowest rates in Finland (2.9 %) and Sweden (3.0 %).

Figure 3 compares the prevalence of UI, use of pads, and catheters among women. In most countries, women suffered from UI more often than men. Also the utilization of pads was higher than in the male groups. But the application of catheters was less prevalent in women.

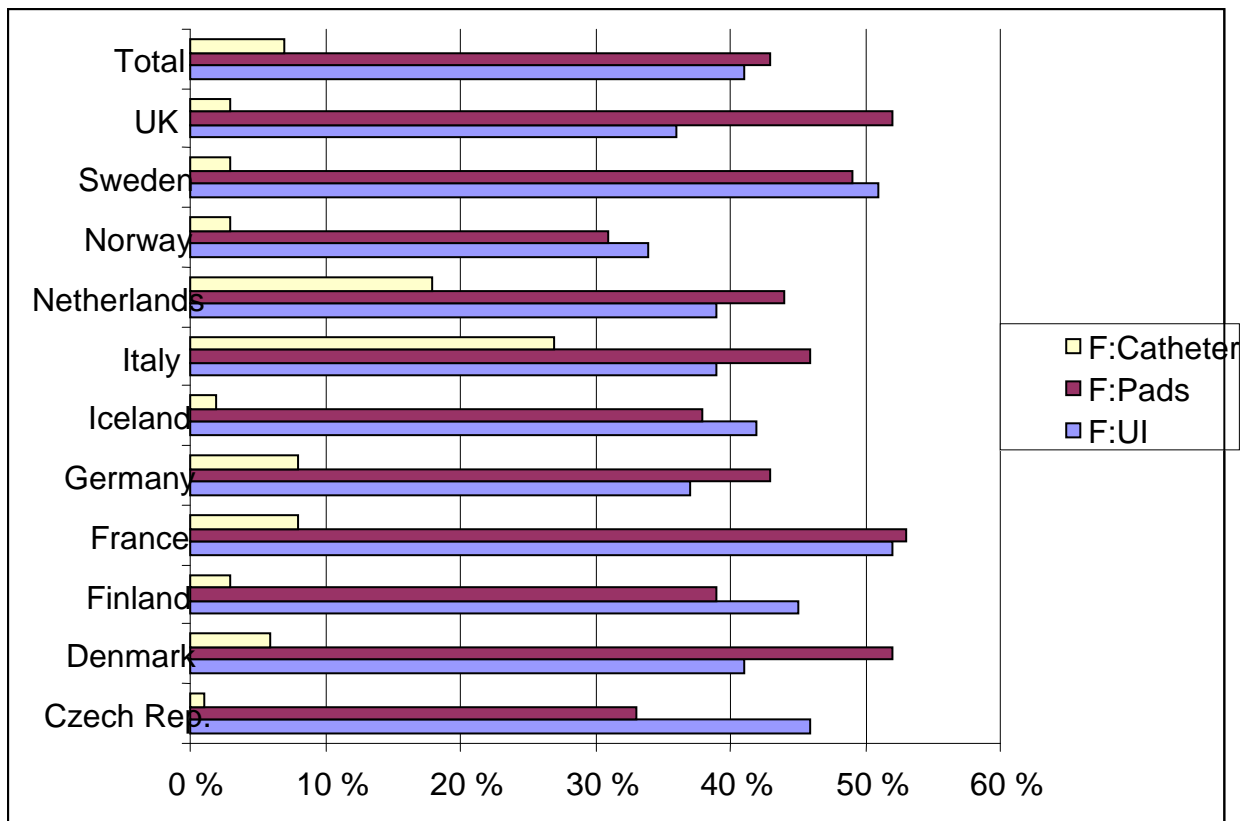


Figure 3. Female: Urinary incontinence, use of catheters and pads

The highest prevalence of UI was found in France (50.7 %), and the lowest in Norway (32.7 %), where only 30.9 % of the HC clients used pads for incontinence. In Denmark and the United Kingdom, half of the study population used pads (51.5 % and 51.2 % respectively). Paradoxically, these numbers are higher than the rates of incontinence. In other countries, e. g. in Italy, the application of catheters was particularly frequent (27.4 % of the female participants). The lowest rates of catheter application were found in the Czech Republic (0.6 %).

The relation between dependency in toileting and the use of pads

The percentage of persons needed assistance in using a toilet varied from one region to the other (table 3). In the Nordic countries, as well as in the Czech Republic and the Netherlands, most of the clients were independent in toileting. Table 3 shows these seven regions as a one group; otherwise a chi-square analysis was impossible.

Table 3: Association between the need for toileting assistance and pad use in participating sites

Sites in the following countries:	Pad Use			X ² , p-value OR: Needs Assistance vs. independent in toileting (0.95 CI)
	Overall n (%)	Needs Toileting Assistance; n (%)	Independent in Toileting; n (%)	
The Nordic countries, Netherlands and Czech Republic (n=2320)	808 (34.8)	142 (17.6)	666 (82.4)	36.1 p<0.001 2.1 (1.7-2.8)
France (n=381)	199 (52.2)	146 (73.4)	53 (26.6)	40.4 p<0.001 3.9 (2.6-6.0)
Germany (n=607)	241 (39.7)	144 (59.8)	97 (40.2)	94.1 p<0.001 5.6 (3.9-8.0)
Italy (n=412)	185 (44.9)	169 (91.4)	16 (8.6)	47.0 p<0.001 6.6 (3.7-11.7)
UK (n=289)	134 (46.4)	36 (26.9)	98 (73.1)	5.7 p=0.02 2.0 (1.1-3.6)
Total (n=4010)	1568 (39.1)	637 (40.6)	931 (59.4)	235.1 p<0.001 3.0 (2.6-3.5)

n= 4010

The association between the need for assistance during toileting and pad use was statistically significant in many countries. It means that participants who needed assistance with toileting were significantly more likely to wear pads than persons, who managed to use a toilet independently ($p < 0.001$). Results for the UK showed an OR of 2.0, 95 % CI = 1.1-3.6, $p = 0.02$. In Italy, participants who required assistance during toileting were 6.6 times more likely to wear pads than those who did not need assistance.

Table 4: Association between the cognitive impairment and UI in participating sites

Sites in the following countries:	Urinary Incontinence			X ² , p-value OR: cognitively impaired* vs. cognitively “intact” (0.95 CI)
	Overall n (%)	Cognitively impaired n (%)	cognitively “intact” n (%)	
The Nordic countries, Netherlands and Czech Republic (n=2317)	981 (42.3)	47 (4.8)	934 (95.2)	14.0 p<0.001 2.4 (1.5-3.9)
France (n=381)	237 (62.2)	110 (46.4)	127 (53.6)	46.2 p<0.001 6.1 (3.5-10.6)
Germany (n=607)	280 (46.1)	70 (25.0)	210 (75.0)	63.5 p<0.001 10.6 (5.3-21.0)
Italy (n=412)	261 (63.3)	96 (36.8)	165 (63.2)	50.2 p<0.001 10.4 (4.9 -22.1)
UK (n=289)	114 (39.4)	22 (19.3)	92 (80.7)	11.6 p=0.001 3.6 (1.7-7.7)
Total (n=4007)	1874 (46.9)	345 (18.4)	1529 (81.6)	237.8 p<0.001 6.3 (4.8-8.1)

* Cognitive Performance Scale 4-6 vs 0-3.
n= 4010

Those individuals who were assessed as moderately to severely cognitively impaired were 6.3 times more likely to suffer from urinary incontinence than cognitively independent individuals. The association between cognitive impairment and UI was significant at p<0.000 for all “regions” (table 4).

Variables independently associated with urinary incontinence

Logistic regression using forward conditional selection was used to identify characteristics independently associated with UI. Data from all 11 sites were analyzed together. Those characteristics that were significantly associated with UI ($p \leq 0.05$) in bivariate analysis were entered into the model (Table 5). Table 5 presents those characteristics that were associated with UI, four of which increased the occurrence of UI by more than 2.0 (odd ratio): faecal

incontinence, urinary tract infections, extreme obesity and the need for assistance during toileting.

Table 5. Variables independently associated with urinary incontinence in home care clients at 11 sites in Europe (binary logistic regression)

Variables	OR (95 % CI) Chi square P-value
1. Need for assistance during toileting (yes/no)	2.4 (1.7- 3.3)***
2. Faecal incontinence (Yes/no)	7.4 (4.9-11.1)***
3. Dependency in IADL (5-7 vs. 0-4) scale: 0-7	1.5 (1.3-1.7)***
4. Urinary infection (yes/no)	3.6 (2.3-5.6)***
5. Extreme obesity (yes/no)	3.0 (2.1-4.4)***
6. Age: 85+ vs. less 85 years	1.4 (1.2-1,7)***
7. Falls last 90 days (yes/no)	1.3 (1.1-1.6)***
8. Cognitive impairment: CPS (4-6 vs. 0-3) scale:0-6	1.9 (1.4-2.6)***
9. Self rated bad health (yes/no)	1.3 (1.1-1.5)**
10. Gender: Female vs. male	1.3 (1.1-1.6)***
11. Dependency in ADL (4-6 vs. 0-3) scale: 0-8	1.4 (1.1-1.9)**
12 Flare up of chronic condition (yes/no)	1.3 (1.1-1.6)*
<i>n</i> = 4,010, $r^2 = 0.256$ * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$	

The model summary gave an explanatory value of 26 % for the association between selected variables and UI (Nagelkerke R^2 coefficient 0.26), (Table 5).

UI and the utilization of formal health services in different European populations

In Table 6, hospitalization during last 90 days, emergency home visits, and frequent visiting nurse visits during the seven days preceding the data collection are shown.

Table 6. Association between UI and use of formal and informal care-giving services

Characteristic	Urinary incontinence			X ² , p-value
	Overall n (%)	Received Care n (%)	Did not Receive Care (%)	
Formal Care	698 (17.4)	386 (55.3)	312 (44.7)	24.7 p<0.001
Hospitalized in past 90 days				1.5 (1.3-1.89)
Emergency home visit	324 (8.1)	179 (55.2)	145 (44.8)	10.2 p=0.001
Visiting nurse visit ≥ 1 day in past week	1405 (35.0)	795 (54.0)	646 (46.0)	45.8 p<0.001 1.6 (1.4-1.8)
Helped by home carer (nurse assistant) ≥ 1 day in pa week	1927 (46.8)	963 (50.0)	964 (50.0)	15.4 p<0.001 1.3 (1.1-1.5)
Informal Care				
Informal help ≥ 3 hours/weekday	2035 (54.3)	1101 (53.6)	952 (46.4)	66.0 p<0.001 1.7 (1.5-1.9)
Informal help ≥ 1 hour on weekend days	2250 (56.1)	1166 (51.8)	1084 (48.2)	52.8. p<0.001 1.6 (1.4-1.8)
Caregiver reported burden/stress	439 (10.9)	280 (63.8)	159 (36.2)	57.3. p<0.001 2.2 (1.8-2.7)

n = 4,010

Clients with UI were significantly more likely to belong to the users of health services than those who were in control of their bladder. This is true with regards to hospital stays (OR=1.5, 95 % CI= 1.3-1.8), to home care visits (OR=1.4, 95 % CI=1.2-1.8), to the services of visiting nurses (OR=1.6, 95 % CI=1.4-1.8), and to other formal services (OR=1.3, 95 % CI=1.1-1.5). Only the “visits of emergency units” (no over night stay) and “home help” did not differ significantly, when comparing persons with and without UI.

Informal help and care-giver burden

Participants without a sufficient bladder control were significantly more likely to receive the mentioned amount of informal assistance than those who control their bladder properly (OR for weekdays =1.7, 95 % CI=1.5-1.9; OR for weekends = 1.6, 95 % CI=1.4-1.8). In 439 cases (10.9 % of the sample) caregivers reported symptoms of burden or stress. Persons who cared of participants with UI were 2.2 times more likely to feel burdened or distressed than those who cared for continent participants (OR=2.2, 95 % CI=1.8-2.7) (table 6).

Discussion

Already in the past, studies and first hand experiences showed, that the management of urinary incontinence is related to quality of life of the client. It also indicates the quality of the formal health care services.⁴² This cross-country study has shown the prevalence of incontinence as well as the frequency of the application of pads and other urinary devices in 11 European regions. At present, this research was the largest comparative cross-national study on home care clients. Usually a comparison of the prevalence in different countries is difficult, because also the definitions of incontinence do not always have the same meaning, and the data that were compiled by different measures are not fully comparable. In this study an uniform and standardized method has been used.^{34, 43}

UI in relation to gender and age

Based on the definition of UI used in this study (being incontinent of urine at least once a week, having an indwelling catheter, being catheterized intermittently or wearing a condom catheter); 45 % of men and 47 % of women suffered from the UI. Unlike Johnson and colleagues⁴⁴ this study did not excluded persons with urinary devices from the analysis. Although Johnson et al did not publish gender differences related to age groups, they reported that women had an overall higher prevalence of UI than men; 59 % vs. 42 %³ Also other studies documented a higher prevalence of incontinence in females than in males.^{12, 15, 45} However in the just presented research the prevalence rate of UI was about two times greater in the French men than in the Czech male study population. The reason may be the extremely high scores of functional impairment in the French sample. Also the application of indwelling catheters was more frequent in France than in the Czech Republic.³⁹ The UI of women was almost equally distributed across the most study sites. No data is available to explain why the prevalence of UI in Sweden is higher than in Norway, 48 % vs. 37 % (OR=1.6, 95 %CI=1.1-2.2).

Characteristics and conditions of the clients associated with UI

According to a bivariate analysis, a number of diagnoses (Parkinson's disease, dementia, stroke, and hip fracture) were associated with the prevalence of UI, but not any of these relations remained significant in the regression analysis. However, those characteristics and conditions of the clients associated with UI, which were selected for the final regression model, were associated with decline in cognitive and physical functioning. There were 382

respondents with FI who suffered also from the UI. In the group in which the FI was not present, only 7% suffered from UI. The association between FI and UI became stronger with the increasing degree of frailty.^{46, 28} Extreme obesity was connected with UI in 91 cases (64 % of the participants) compared to 36 % of those without obesity.

UTI was documented in 103 (78 %) persons with UI, but only in 22 % of the persons who controlled their bladder. This finding corresponds with previous studies.^{12, 22 -23} Bird stated that clients with oedema often receive diuretics that may lead to urge urinary incontinence⁴⁷. In the current study, no significant association between oedema and UI was found. However the use of diuretics was not studied explicitly. One explanation could be that among those individuals who had oedema, only 40 (10 %) had moderate or severe cognitive impairment (CPS > 3, X², p-value was significant for all age group). Respondents who suffered one or more falls during the last 90 days had a higher prevalence of UI (546 persons = 53 % of the sample) than those who did not fall (479 = 47 %). This finding corresponds with other studies that found, that a weekly or more frequent incontinence was associated with an increased risk of falls.^{48, 45} In previous studies, the presence of UI correlated with self-reported poor health.^{49, 44} Also in this study persons who reported poor health were more likely to have UI than those, who did not report that their health was poor. But the increase of the OR was only modest (OR=1.3). Based on results from Johnson, Kincade, Bernard et al.⁴⁴ it seems that high levels of disability in continent as well as in incontinent home care clients in weakens the significance of self-rated health in the AD HOC study.

The concept of the “dependent continence” is used for persons who were continent solely through the efforts of a caregiver.⁵⁰ In the current study, urinary incontinence was strongly associated with the need for assistance when using a toilet. Palmer, Baumgarten, Langenberg et al. stated that dependence on others for ambulation significantly increased the odds of developing incontinence during hospitalization.⁵¹ Frail older adults may need assistance with toileting because cognitive dysfunction impairs their ability to recognize the need to toilet and/or to toilet independently or because their locomotion deficits interfere with their ability to use the toilet without assistance. In a home care setting where on average in all of the countries, 61 % of the clients lived alone, the permanent help for the toilet use simply cannot be available.

The use of pads in different countries ranged from 29 % to 52 %. The pad costs did not account for the enormous variation of use in different regions. In the Czech Republic, the clients had to

pay, and consequently the prevalence was low. However, in Italy, costs of the devices were completely reimbursed, but still, the prevalence was relatively low. In the UK, the female clients had a higher prevalence of pad use than prevalence of UI. In a four centre population study 10% of male subjects were using pads in the aged 70-79 years.⁸ A Japanese study showed that 56 % of the subjects used diapers or similar devices, and diapers were used in 24 % of still continent persons mainly for protective purposes.⁸ Wearing pads however may increase the rate of accidents and decrease the rate of successful voids.⁵² Even in studies of younger women a high contribution to the overall cost of UI is attributable to pad usage.¹⁰ Pads may be used because of a lack of adequate examinations and treatment. Diapers may be an excuse for not providing adequate staffing for helping the elderly with toileting. Johnson, Ouslander, Uman et al. showed, that the old users would prefer medications (77 %) over diapers (21 %), while their family and nurses prefer pads. These differences between users and their helpers were significant. The same was not true of prompted voiding (41 % stated that they would probably or definitely prefer prompted voiding while 50 % reported that they would prefer diapers).²⁶ However, pads can be a reasonable solution in some cases, e.g., for those older persons who are frail, cognitively impaired, or in other ways unable to regain continence from any routines or training models.⁵ The nurses in home care should know the different incontinence products to help the residents in tailoring an appropriate help that corresponds with the client's needs, and to avoid complications, such as rashes and decubitus.²⁷

Nine percent (n=345) of the clients suffered from a combination of UI and cognitive impairment. Such combinations were less frequent in the Nordic countries, the Czech Republic, and the Netherlands, more frequent in the south and middle of Europe. The difference may relate to distinctions of the welfare policy that applies in each country. In the Nordic model, the social benefits are equal for everyone. If a patient needs more help than a home care facility is able to provide, he/she becomes a candidate for admission to a nursing home. Such a model is called "the Social Democratic" or "institutional model".⁵³ In Southern Europe, a Catholic tradition dictates that the social responsibilities have to be discharged to the family.⁵⁴ The same type of clients that would get a place in an institution in the Nordic countries would stay at home in France, Germany, and Italy, and would cause a heavy care burden to the relatives. These different welfare models do not explain why the home care clients in the sites in the Czech Republic and the Netherlands have the same case-mix as the Nordic countries. Carpenter, Gambassi, Topinkova et al. carried out an analysis of the Ad HOC sample that was based on socio-demographic information.³⁴

Care-giver burden stress: formal help

In the previous parts of the contribution, it has been shown that care-giver burden and stress were more likely with regards to caring for individuals suffering from UI (280 =64%). The problem was less prevalent in those persons who cared for persons without incontinence (159 =36 %). For understanding the burden of UI, more knowledge about the relation between formal help and care-giver burden is needed. To reduce the care burden, some older persons have an indwelling catheter inserted.³⁸

In the whole sample, clients with UI received a significantly greater amount of formal care services than those without UI. These findings support the results of Santos-Eggimann et al. They found, that UI was a significant factor associated with urgent request for help (“unscheduled visit by nurse”).⁵⁶ However, the utilization of formal care and nursing services is still limited in most of the countries.

Incontinence is a symptom of many different conditions. Moulin, Hamers, Paulus et al.³⁰ systematically reviewed 12 studies on the effects of nursing intervention on UI. This review revealed some evidence that nursing interventions can effectively reduce UI in community-dwelling individuals. One of the major limitations of the studies was a lack of long-term observations to determine the sustainability of short-term benefits over time. Butler urges clinicians to ask about the involuntary loss of urine, and a careful history alone can often reveal 80 % to 90 % of the diagnosis⁵⁶ when UI is documented because for treatment, the knowledge of the cause is important. Additionally, a detailed anamnesis must be connected with a physical examination and lab tests.³²

Conclusions: study limitations and strengths

The AD HOC study had some limitations. No distinction has been made between the different types of UI. Also, no information on surgical intervention or on exercise regimes was collected. Similarly, no analysis of the improvement of bladder control by medication has been made. Even the medication as a possible cause of UI has not been taken into account.

The International Continence Society (ISS) defines incontinence as “the complaint of any involuntary leakage of urine”.⁵⁷ But in this study a narrower definition was applied. Only a

leakage “once a week or more often” has been used for describing the magnitude of the problems for older clients. This perspective makes a comparison with other recent studies difficult. No pad tests to measure the amount of leakage have been carried out. The logistic regression gave an explanatory value on 26 % for UI and associated variables for the total sample. The regression could have been run for each separate site in order to describe special concerns.

However, this is the first cross-national study using the same sample criteria and assessment tools at different sites in 11 European countries. This study shows how common UI and use of pads is among home care clients.

In order to reduce UI, the nurses need competence, motivation, and time to detect potentially remediable causes of UI and to introduce effective management programs. This study showed that the knowledge of the problem can be improved by a standardized assessment that could provide a basis for an effective intervention. Further studies are needed to identify treatments and programs that have long-term effects, and that will relieve the burden of the incontinence on home care clients as well as on their relatives. This information would enable older persons to stay at home with a better quality of life and quality of care.

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