

## Urinary Incontinence in Women

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**Abstract** The majority of 200 women in community living between the ages of 55 and 90 described themselves as having some degree of uncontrolled urine loss. They reported severe wetting (63%) on a daily basis (69%), and most (56%) had had the problem for more than five years. These women completed the diagnostic phase of a treatment-evaluation program currently in process.

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Although urinary incontinence is common particularly among women, little is known about self-management and beliefs with respect to the problem. A British community survey found 30 percent of women compared to 8 percent of men over age 35 years with uncontrolled urine loss (Thomas, Plymat, Blannin, & Meade, 1980). Of those women who experienced urinary incontinence on a regular basis, 40 percent were reported to be 55 years of age and older. Thirty-eight percent of noninstitutionalized women over age 60 years were reported to have urinary incontinence symptoms in a University of Michigan study (Diokno, Brock, Brown, & Herzog, 1985). So far, little attention has been given to the significance of this problem for a group of basically healthy, ambulatory, older female individuals living at home.

Relevant prior studies focused primarily on the prevalence and characteristics of urinary incontinence. Table 1 provides detail of five of such studies that reported to varying degrees the effect of urinary incontinence on the social, mental, or domestic lives of the women

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involved (Campbell, Reinken, & McLash, 1985; Iosif, Henriksson, & Ulmsten, 1981; Thomas et al., 1980; Vetter, Jones, & Victor, 1981; Yarnell, Voyle, Richards, & Stephenson, 1981). Sample sizes and age ranges varied, with only two studies focusing exclusively on women (Iosif et al., 1981; Yarnell et al., 1981). Data were obtained by interview (Vetter et al., 1981; Yarnell et al., 1981), written questionnaire forms (Campbell et al., 1985; Iosif et al., 1981), or a combination of methods as in Thomas et al., who interviewed a subsample ( $n = 178$ ) of those responding to a large ( $n = 18,084$ ) postal survey.

In these studies, only 5 percent of incontinent women reported disruption in their social or domestic life because of urine-control problems (Iosif et al., 1981; Yarnell et al., 1981). Only 9 percent had sought help from available community resources and most of those with minimal wetting did not consider it a medical problem (Thomas et al., 1980; Yarnell et al., 1981). Urinary incontinence was generally considered an embarrassing problem, as evidenced by 84 percent of women in one study who later admitted to being incontinent while initially having denied it (Yarnell et al., 1981). Severe embarrassment was reported to be minimal, however, with only 3 percent so acknowledged (Yarnell et al., 1981). Nonetheless, anxiety and depression increased significantly with increased severity of incontinence (Vetter et al., 1981). The physical stress of wetting was noted in one study where 86 percent of elderly incontinent individuals reported extra laundry, usually done by the person herself (Vetter et al., 1981).

In contrast to the preceding studies, Norton (1982) questioned 55 women with a diagnosis of established incontinence who attended a urodynamic clinic, most of whom had received some form of treatment. Their ages ranged from 22 to 78 years (mean 50 years). This study differentiated degrees as mild, moderate, or severe based

TABLE 1. Overview of Relevant Prevalence Studies

Authors	Sample Characteristics					
	Method	Type*	Size	Number Incontinent	Sex	Age (yrs)
Thomas et al., 1980	Questionnaire and interview	R	178	178	M, F	15-65
Yarnell et al., 1981	Interview	R	1000	443	F	18 or over
Vetter et al., 1981	Interview	R	1280	176	M, F	70 or over
Iosif et al., 1981	Questionnaire	S	512	321	F	21-70
Campbell et al., 1985	Questionnaire	R	555	129	M, F	65 and over

\*R = random; S = self-selected.

on amount of wetting, frequency, and pad use. Almost half (47%) of the women had mild incontinence and in 24 percent it was severe. Most felt that leakage affected both their physical (61%) and mental (75%) health. Inability to perform physical exercise, fatigue, depression, anxiety, and fear were reported. Sixty-nine percent of the women said that leakage interfered with domestic chores and 76 percent with their social life for fear of public wetting. Relationships with family was the least affected area, with only 31 percent of the women expressing concerns; more (57%) felt their relationships, primarily sexual with husband or boy friend, had been affected. Other behaviors affected by urine leakage were reported for work outside the home (55%) and way of dressing (54%). Smell was a concern for 48 percent who restricted activities because of it, but a larger group (75%) felt their activities were restricted by fear of embarrassment. Overall, reactions were individual and unpredictable; some with minimal leakage perceived significant restrictions while others with severe incontinence did not.

It seems likely that reactions of incontinent individuals taken from samples of persons who have sought help (Norton, 1982) are different from those of women responding to general survey studies (Thomas et al., 1980; Yarnell et al., 1981), with perhaps a greater magnitude of perceived difficulty in the first group. Nonetheless, so little is known about management of urinary incontinence that information from those who do seek help has merit. This paper reports data from 200 women who described themselves as having some degree of uncontrolled urine loss and had completed the diagnostic phase of a treatment-evaluation study in process (Wells, Brink, & Diokno, 1987). The data presented are not central to the main study, the purposes of which were to determine the characteristics and etiology of urinary incontinence and to evaluate specific exercise in comparison to conventional drug treatment. They provide insight that may be useful to nurses in practice, however.

## METHODS

Women learned about the study through a variety of mechanisms, including informational brochures distributed at target sites, a slide/tape presentation, educational programs, and newspaper/media publicity. Every effort was made to recruit women across all social classes. Thus every senior-focused agency or congregate site and relevant social agency within the Midwestern study site city (population approximately 107,000) were solicited. These included nutrition sites, senior highrise dwellings (to reflect several standards of living), the Salvation Army, YWCA, and private senior social groups. Program publicity appeared in ten public newspapers, including three dailies, one with citywide distribution and two statewide papers. Information was carried twice in the county senior citizen newsletter and was contained in a repeated radio public-service announcement. In addition, the investigators discussed the topic and sought recruitment on programs for senior citizen radio (four times) and health-focused television (two times). Women were also sought through referral from health care providers. Thus an informational letter was sent to all private physicians within the city and similar information was presented in the two major hospital internal medical newsletters. The investigators provided in-service workshops, with recruitment presentations to the local visiting nurse service, as well as a larger agency 50 miles to the east.

Entry into the study was through a free screening visit of approximately one and one-half hours in an easily accessible outpatient setting. A specially trained nurse-interviewer used a 120-item form to elicit specific details of the urine-control problem, wetting management, and current and past health. This history-gathering instrument was developed by the investigators from an extensive review of the literature and tested in their collaborative practice site prior to use in the study. Each subject's history form was reviewed for consistency by

one of the nurse-investigators; any difficulties were resolved either by discussing them with the interviewer or by questioning the subject. This instrument has face validity but has not been subjected to psychometric testing.

A voided sample of urine was obtained and analyzed. If it was positive for pathology, a bladder urine specimen was acquired through catheterization and examined for bacteria and sensitivity to antibiotic medication. A physical examination was performed by a nurse practitioner who measured general health variables such as cardiac and respiratory status and provided careful evaluation of neurologic, gynecologic, and urologic systems. A thorough pelvic examination was done, including a multifaceted evaluation of pelvic floor muscle strength.

At the end of the examination, women were given a provisional diagnosis with treatment options. Those who complained of uncontrolled urine loss, were age 55 years or over, able to read and understand English, able to speak and hear conversation adequately, and not nursing home residents were invited to enter the full diagnostic phase of the study. A tabulation was not kept of those women who sought study services either through their own request or professional referral but who failed to meet study selection criteria. Such individuals who were self-referred were most often below the age recruitment, and those referred by others were most often nursing home residents or so mentally impaired as not to understand conversation.

Women who met the criteria, had signed the research consent form, and were currently free of urinary infection were instructed in diary recording of fluid intake, urine output, and wetting behaviors. They were given a toilet-fitted urine collector and color-coded diary forms with a request to keep careful records for a minimum of four days and nights. Additional history was sought in a take-home questionnaire focused on personal and familial patterns of urine control and attitudes/beliefs about urinary continence/incontinence. This instrument was developed by the investigators from literature review and their clinical experience. It has face validity but has not been subjected to psychometric testing. Finally, the diagnostic phase was completed with a comprehensive urodynamic evaluation in a urology outpatient setting (Pearson & Noe, 1979). Diagnostic findings are presented elsewhere (Diokno, Wells, & Brink, 1985; Wells et al., 1987).

Twenty-five women who met selection criteria and signed the study consent form subsequently decided not to participate in the research. Seventeen declined on reconsidering the urodynamic evaluation, which they described as problematic to them in some way. The remainder declined because of a variety of personal reasons, including spouse illness or death, and reloca-

tion. Subjects who either failed to meet selection criteria or refused to participate were offered service in a community-based continence clinic (Brink, Wells, & Diokno, 1983).

## FINDINGS

Statistical analysis included chi-square tests to detect association between categorical measurements and analysis of variance for testing equality of means among groups.

The majority (53%) of the 200 women were self-referred, followed by professional referral (39%) and family or friend contact (8%). They ranged in age from 55 to 90 years (mean 68.5 years; SD 8.7). The sample was divided into three age groups: 39 percent between 55 and 64 years, 35 percent between 65 and 74, and 26 percent between 75 and 90. Nearly half (49%) were widowed, separated, or divorced; 45 percent were married, and a minority (6%) were single. Most (74%) of the women lived in private housing, typically either alone (45%) or with a spouse (44%). The sample was unusual for its level of education: 60 percent had partial college experience extending to one or more graduate degrees.

Seventy percent reported their health to be good to excellent, the remainder describing it as fair (27%) or poor (3%). Functional status was high, with normal or adequately corrected levels observed in 88 percent for hearing and 90 percent for vision, with normal memory/orientation for 94 percent and unassisted mobility for 91 percent. Chronic disease was prevalent, with cardiovascular (51%) and musculoskeletal (50%) problems most common.

Tables 2 through 4 present the reported volume, fre-

**TABLE 2. Protective Pad Use by Reported Peak Volume Urine**

Volume	Lost* Pad Use <sup>b</sup>			Number of Subjects
	Homemade		Commercial (%)	
	No Pad (%)	Pad (%)		
	38	12	50	197
Pants damp	55	14	32	44
Clothes wet	18	18	64	28
Runs down leg	41	15	44	54
Pools on floor	32	7	61	71

\*Patterns of pad use differed significantly by peak volume urine lost ( $\chi^2$  15.523;  $P < 0.05$ ).

<sup>b</sup>Percentages total 100 percent in each row (except for rounding effects).

**TABLE 3. Protective Pad Use by Reported Frequency of Urine**

Frequency	Loss <sup>a</sup> Pad Use <sup>b</sup>			Number of Subjects
	No Pad (%)	Homemade		
		Pad (%)	Commercial (%)	
	38	12	50	197
Daily	27	14	59	135
Less than daily	60	8	32	62

<sup>a</sup>Patterns of pad use differed significantly by frequency of urine loss ( $\chi^2$  18.868;  $P < 0.01$ ).

<sup>b</sup>Percentages total 100 percent in each row (except for rounding effects).

quency, and duration of urine loss in terms of protective pad use. (Three women initially denied urine loss during the interview but subsequently acknowledged it in response to urologic questions and/or demonstrated urine loss on examination). Sixty-three percent of women reported urine either pooling on the floor or running down their legs, with an additional 14% wetting their clothes. Most (69%) reported urine loss on a daily basis, 19 percent reported weekly loss, and 13 percent reported less frequent or variable loss. The majority (56%) reported urine loss difficulty for more than 5 years' duration, and of this group more than half (66%) had had the problem for 10 years or more.

Sixty-two percent of these women wore protective padding. Use of pads was significantly related to large volume loss, daily wetting, and longer experience of urine loss. Noncollege-educated women were signifi-

**TABLE 4. Protective Pad Use by Reported Duration of Urine Loss**

Years	Difficulty <sup>a</sup> Pad Use <sup>b</sup>			Number of Subjects
	No Pad (%)	Homemade		
		Pad (%)	Commercial (%)	
	38	12	50	197
< 1	63	11	26	19
1-5	39	3	58	69
> 5	32	18	50	109

<sup>a</sup>Patterns of pad use differed significantly by duration of urine loss difficulty ( $\chi^2$  15.543;  $P < 0.01$ ).

<sup>b</sup>Percentages total 100 percent in each row (except for rounding effects).

cantly more likely to wear pads in general (79%) than college-educated women (58%) ( $\chi^2$  4.885;  $P < 0.05$ ). Analysis by age group and education showed no significant differences for pad use ( $\chi^2$  1.823, 1.574, 0.592;  $P > 0.05$ ) or type ( $\chi^2$  4.353, 9.946, 3.923;  $P > 0.05$ ). The most commonly used pad was a commercial menstrual product (63% of those using padding), which varied from pant liner to maximum absorbency depending on usual volume lost and security needs.

Homemade pads (20% of padding) were either toilet paper folded into various thickness or washable material such as wash cloths or pieces of towel. Nine percent varied their padding between homemade for home or typical use and a commercial menstrual pad for social activity or expected heavier volume loss. Infrequently (9%) women used a special product commercially designed for urine containment. These varied from complete disposables to washable pants with disposable pad inserts, and had been obtained from drug stores, medical supply centers, or direct mail order.

Of the 123 women who wore a pad, 22 percent did not usually change it during a day. The remainder were evenly divided between one to two (39%) and three or more (39%) changes per day. Some women commented that they did not change pads only because of volume wetting but did so for concerns of smell, comfort, or general aesthetics.

Other self-management included frequent toileting (53%); fluid restriction in terms of volume, time, or caffeine content (25%); limitation in social or physical activities (12%); and extra attention to hygiene such as frequent clothes changing or bathing (8%). Only 7 percent of these women could not think of any particular behavior when asked the open-ended question, "How do you manage with this urine-control problem?"

Diary recordings of toileting patterns and wetting instances were analyzed for the 184 subjects (92%) who returned usable forms (Table 5). Recordings had been kept for from 1 to 20 days (mean 4.7 days; SD 2). Day toileting ranged from 2 to 16 times (mean 7.51) and was significantly related to age group, with the youngest group toileting most often. Night toileting ranged from one to six times (mean 2.19); of those who kept records, only five women showed no night toileting. Seventy-six percent of these with usable diaries indicated wetting episodes that ranged from a mean number of 0.10 (i.e., 1 per 10 days) to 14.30 per day with the overall mean 1.92; that is, slightly less than 2 episodes per 24 hours. By history, most women reported day wetting only (53%). For older women (age 75-90) both day and night wetting were more common (64% of this age group in contrast to 45% of the whole sample [ $\chi^2$  14.204;  $P < 0.01$ ]).

When asked, almost half the sample (42%) had no

TABLE 5. Diary-recorded Toileting and Wetting by Age

Age Group (yrs)	Group				$\bar{x}$ Wetting Instances/24 hrs (range 0.10–14.30)	
	Day Toileting* (range 2–16)		Night Toileting (range 1–6)			
	N	$\bar{x}$	N	$\bar{x}$	N	$\bar{x}$
55–64	74	8.14	74	2.09	56	1.86
65–74	67	6.99	64	2.13	49	2.04
75–90	43	7.26	41	2.46	34	1.87
Totals	184	7.51	179	2.19	139	1.92

\*Day toileting differed significantly by age group ( $f$  3.8410;  $P < 0.05$ ).

idea as to what might be the cause of their urine-control difficulty. One-fourth thought childbirth and/or weak pelvic muscles was the cause; a smaller number (14%) attributed wetting to aging or to disease or drugs (13%). Most (73%) thought many older people had such difficulties. Seventy-four percent thought urine-control difficulty was a cause for concern, with 23 percent thinking it extremely serious. Eighty-nine percent found this difficulty embarrassing, 41 percent very much so, with no significant difference across age groups ( $\chi^2$  8.5333;  $P > 0.05$ ).

Only 47 percent considered their usual life pattern to have changed because of incontinence. Change in life pattern was not significantly related to either age group or peak volume of urine loss, but was significantly related to frequency of urine loss. Fifty-four percent of those with daily urine leakage compared to 37 percent of those with less frequent wetting felt that their usual life pattern had changed ( $\chi^2$  4.5213;  $P < 0.05$ ).

Forty percent said it was difficult to tell families about urine-control problems and another 24 percent said it very difficult. Most (70%) thought it was difficult to seek help for this problem, with a little more than one-fourth (27%) considering it very difficult. Most (51%) women were uncertain about regaining urine control even with a comprehensive evaluation and treatment options. The remainder were mostly optimistic, with 44 percent thinking it somewhat to highly likely and only 5 percent thinking it somewhat to highly unlikely.

While age group, education level, and frequency and duration of urine loss were not significantly related to optimism about control, referral source was. Women who had referred themselves for evaluation were more likely to believe that regaining urine control was possible (50%) than those referred by either professionals (39%) or family or friend (25%) ( $\chi^2$  11.087;  $P < 0.05$ ).

## DISCUSSION

Although the sample was larger and older, our findings correspond to the magnitude of the problem as reported by Norton (1982). The frequency and persistence of urine leakage in this well-educated group, most of whom (65%) had sought previous help, supports their caution in expecting urine control in the future.

Protective pant padding was the most frequent response to loss of urine control and was commonly a menstrual product. Estimating the cost of a pant liner at \$0.10 each and one per day yields a sum of \$36.50 yearly as minimum. Estimating cost of a maximum-strength pad at \$0.20 each and five per day yields a sum of \$365.00 yearly for an average maximum. These costs, if representative, constitute a considerable expenditure for some women.

Despite good community resources for products designed especially for wetting management, most women were either unaware of or not interested in them. Of such products worn, most appeared to be used in response to special advertisement (e.g., frequent promotion on pages of the local television program guide or in national television commercials) or because they were readily available in local discount stores. In general, women were unaware of special products beyond basic "rubber pants" or infant diapers. Some noted trying a product in the past and not having been satisfied with it. A complaint was that marketing methods did not describe a product adequately and it was expensive to try new items that might not work. A need for information that differentiates product features linked to volume and frequency of urine loss as well as lifestyle needs (e.g., discreetness, comfort, launderability, cost) is apparent. A product resource guide with basic feature description is available: Help For Incontinent People, Resource Guide (\$3.00), P.O. Box 544, Union, SC 29379.

Women using menstrual products often commented on perceived low cost and accessibility as well as familiarity and lack of embarrassment in purchasing these products. Some women, however, with frequent, large volume urine loss did not use any form of protective padding. On exploration, they seemed to define positive self-image or normalcy as not using padding.

Apart from protective padding, use of self-management techniques seems minimal and limited. While this may be a function of a general, open-ended question without probes, it may reflect appropriate minimum response to usual small-volume urine loss in contrast to the coded peak or denote adaptation to numerous, varied behaviors of such duration as to be assimilated into everyday life. Indeed, the self-management response was consistent with the majority view that their life pattern had not changed.

Day toileting frequency (mean 7.51) by diary records was within normal patterns of six to eight voids per day. It is interesting that the younger group (55–64 years) toileted more. This may represent greater available energy for prophylactic measures. Although night toileting was not significantly related to age group, the mean appeared to increase with age and overall was slightly higher than the expected norm of one to two voids per night. Of interest, the group age 65 to 74 years recorded less day toileting and more wetting episodes.

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