Daily-living management of urinary incontinence: A synthesis of the literature

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Abstract

This is a comprehensive review of the research literature on daily-living management of urinary incontinence by people who live in the community. While most self-management literature investigates how people self-manage clinical treatments and therapies, this review focuses on how urinary incontinence symptoms are managed in everyday living to maintain social functioning. Control of urinary incontinence in everyday living is achieved using a range of strategies, which were identified and conceptualised as: *Containing*, *Restricting*, *Concealing*, and *Modifying*. Understanding the strategies people use to manage UI in daily life will enable health professionals to provide more appropriate and personally tailored advice to clients.

INTRODUCTION

This is a comprehensive review of the research literature on daily-living management of urinary incontinence by people who live in the community. While most self-management literature investigates how people self-manage clinical treatments and therapies, this review focuses on how urinary incontinence (UI) symptoms are managed in everyday living to maintain social functioning. Control of UI in everyday living is achieved using a range of strategies, which were identified and conceptualized as: *Containing*, *Restricting, Concealing* and *Modifying* approaches.

MANAGING URINARY INCONTINENCE IN THE COMMUNITY

Despite available treatments and therapies, many people living in the community continue to experience UI. In Australia, it is estimated that there are 3.84 million people with UI – approximately 3.1 million (38.1%) women and 780,000 (10.2%) men.[1] UI has a major impact on physical, quality of life, emotional and social health and wellbeing,[2,3,4,5] including sleep problems,[4,16] self esteem,[4,6] depression,[2,4,6] psychological distress,[7,6] restrictions in physical activity,[8] travel,[5,9] leisure,[10] work,[11] relationships and sexuality.[4, 12,16] The consequences of UI include embarrassment,[10] odour, loneliness and social isolation,[2,16] stigma,[13,14] financial cost,[15] and can lead to institutionalisation[1, 16] and depression.[17,18,19]

Great energy is devoted to managing and normalising UI into daily life. Self-management is the person's ability to manage their symptoms, treatment, as well as the physical and psychosocial consequences and life style changes inherent in the underlying chronic condition.[20] Daily-living management of UI involves creating order, discipline and control,[21] not only to manage the physical consequences of

urinary leakage, but also its emotional and social effect. Most literature on self management tends to focus on how patients adhere to treatment or therapy, rather than how they live their lives every day with the impact of symptoms, treatments and therapies. However, understanding how clients feel and the strategies they use to manage their daily lives is central to provision of holistic care. For the purposes of this review, we have defined daily-living management as strategies used to integrate UI into daily-living, rather than strategies designed to treat or cure it.[22] This comprehensive review of the literature provides a conceptual synthesis of evidence from the literature in relation to strategies adult men and women living in the community use to manage the symptoms of incontinence in everyday living.

SEARCH STRATEGY

A review protocol was designed to explore the literature in relation to the question. A broad search strategy was required as most research into daily-living management of UI in community settings has been descriptive, an adjunct to other investigations, or has used qualitative methodologies; and there have been few randomized controlled trials.

Multiple computerized medical, nursing and sociological databases were searched (Table 1). A full internet search was also carried out using Google to uncover grey literature such as government reports, newsletters, fact sheets and conference proceedings. National and international continence websites were searched for related information. In addition reference lists of accessed documents were hand searched. A range of keywords were used to enable an expansive search: UI (including stress, urge and mixed), self-management (including -care, -help, -control), management/ therapy/ strategies (conservative, behavioral, coping),

adaptation, and adjustment. Types of self-management strategies were also used as search terms (such as fluid intake, incontinence pads, toileting). English language publications were included (although abstracts from non-English papers were included if written in English), with no limits set on publication date. Papers were excluded if UI was directly related to dementia, stroke, Parkinson's disease or older people living in residential aged care facilities, because the focus of this analysis was on people living in the community who are able to self manage. Papers were also excluded if management was complicated by spinal cord injury or diabetes. Publications related to devices (such as catheters) were included if their focus was on daily-living management by community-dwelling adults, as opposed to treatment.

Based on our review of the literature, management of UI in daily-living was synthesized into *Containing, Restricting, Concealing* and *Modifying* approaches. Included papers were then re-analyzed to focus on findings related to these approaches. These interlinked approaches are applied in strategies related to everyday functions including: planning, routines, toileting, using pads and aids, adjusting fluids, body care and hygiene, physical activity and exercise, social interactions and structuring the environment. Publications were summarized, noting their research design, participant group characteristics, sampling, context, and approaches for living with UI. Studies identifying *Containing, Restricting, Concealing,* and *Modifying* daily-living management strategies are outlined in Table 2.

URINARY INCONTINENCE AND DAILY-LIVING

How UI is managed may vary, but the need to control urinary leakage in order to maintain a normal lifestyle remains the underlying theme of daily-living management.[23,24,25] Management approaches and strategies are influenced by individuals' functional and cognitive ability, UI severity,[26,27] UI type,[26,28] age,[29] and

gender.[30,31] These approaches are also influenced by the individual's normal daily patterns and contexts such as whether the person is mainly at home or at work.[32] Incontinence is socially stigmatized and fear of recurrence is a driving force behind daily-living management. Management strategies evolve as the person seeks to normalize UI into their lifestyle. People who find their UI difficult to manage have reported using significantly more self-care behaviors than those who said it was not difficult to manage.[26]

Containing Strategies

Containing strategies are usually the first reactive approach to managing UI. Incontinent episodes may be contained by collecting urine using an absorbent product or collection device. Containment strategies are used to deal with expected or unexpected UI episodes or to provide a sense of security for people who are mainly continent, but fear an incontinent episode.

Containment strategies are usually personalized, related to the severity and type of UI and personal circumstances, such as age, activity level, social context and personal preference. Although absorbent products such as pads and pants are used by both men and women, they are more favored by women. Brown and Miller[8] found that in Australian women with UI, 17.4% of young women and 63% of middle aged women and 74% of older women wore pads. Studies about pad use identify that between 40% and 61% of women wear pads or some type of absorbent product[22,26,33,31] as compared to 20% of men.[31] Stoddart and coworkers[34] found that mini pads were the commonest device used by women. Although there is a large range of continence-specific products available, some women with UI use menstrual pads because they are considered more 'normal'.[35,32,36]

Boyle and associates[37] reported that men wear protective pads and Johnson[38] identified that continence pad use by men was more common when UI is severe. In contrast men with mild to moderate UI prefer to ensure a toilet was nearby in preference to using a pad. For example Eastwood and coinvestigators[23] found men with multiple sclerosis preferred to make sure they could reach a toilet even if this meant altering where and when they went out.

Reported use of other types of urine collecting and protective devices include: catheters and urinals by both men and women;[41] pants, used towels, paper towels, tissue paper,[39] absorbent cloth[40] catheters, urinals and leg-bags by men;[42] and plastic bedcovers, cotton, and toilet paper by women.[43,44]

Restricting Strategies

People tend to avoid or limit factors, activities and situations that may provoke episodes of UI.[33] Restrictions and limitations may influence social activity, travel, physical activity, fluid intake, choice of occupation, and intimate relationships.[33,45] People limit travel to places and routes where they know the location of toilets, prefer to drive themselves so they can stop when they need to, drink less fluid if planning to go out, restrict certain physical activities such as lifting, and go out less.[46]

Major and potentially life-changing restrictions on social activity can result from UI.[28] Some will stop going to places (such as public transport or the theatre) where they know it will be difficult to get to a toilet, [47,46,42] and curtail social activity to the extent that they stop going out altogether and become isolated.[41,47] For those who do go out, social activity may be restricted,[28, 48,14] or limited to private places, such as a friend's home.[49] Social and intimate relationships may be restricted to the extent that new relationships, sexual intercourse and/or orgasm are avoided.[8,32]

Many physical activities may provoke UI. Therefore, activities such as lifting, strenuous activity, sport (such as jogging) and standing for long periods are avoided to reduce the risk of urine leakage.[8,26,50] Another physical restriction relates to fluid intake. Particular fluids, such as caffeinated drinks or alcohol, may be eliminated or avoided.[8,22,30,40,42,51] General fluid intake may be restricted, particularly when going out, prior to exercise, or prior to bedtime to avoid nocturia.[8, 22,26,30, 39,41,42,44,46,48,51] These restrictions have the potential for profound negative health impacts on a person's lifestyle, psychological status, social life, social relationship, hydration and physical fitness.

Concealing Strategies

Concealing activities aim to prevent others from being made aware of incontinence, even when urine loss occurs in public. [41,14,23,51,42] Many clues can point to urinary leakage such as the smell or sight of wet clothing, wet patches on furniture, or a variety of objects or activities that indicate an individual suffers from UI[41]. Concealing incontinence maintains social continence, a public identity and a person's sense of self.

Research suggests that secrecy and concealment are major preoccupations for those experiencing UI. Mitteness and Barker[49] reported that people with UI will control information about their condition carefully, only revealing their problem to very close family and friends, while Ashworth and coinvestigators [43] noted that some failed to inform even close family members.

In addition to *Containing*, pads and related devices conceal UI episodes by preventing clothing from becoming wet. However, these devices may reveal the presence of incontinence if they become visible. For example, post-prostatectomy,

men may use pads to conceal immediate incontinence, but they also report feeling self-conscious about the bulge created by the pad.[36,52]

Continence pads or aids are usually effective, but failures may occur. Therefore, in order to ensure secondary concealment, people with UI often wear clothing made of suitable fabrics (eg. dark colored or patterned) and design (eg. skirts, long jackets) to further conceal urinary leakage.[8,23,24,43,44,48,53,54] Persons with UI also report engaging in efforts to distract or disguise in order to conceal UI. For example, Eastwood and colleagues[23] described how one man would splash water onto the front of his trousers or carry his jacket in front of him to conceal evidence of urine loss.

Deodorizers or frequent hygiene routines are used to conceal odor associated with incontinence.[32,35,43] This constant worry[43] about the possibility of odor leads some to launder their underwear, clothing or bedding frequently whether soiled or not "just in case it smells".[41]

Frequent toileting also may attract attention, resulting in a fear that others will discover UI. Efforts are made to conceal the reason for non-attendance at particular social occasions (eg. the football) or for the need to go to the toilet frequently.[23, 24, 42,55]

Modifying Strategies

In addition Containing, Restricting and Concealing, people with UI also use Modifying strategies, which are developed over time to prevent UI episodes or attain social continence. Modifying strategies enable participation in a broader range of daily-living social activities, assisting the person to normalize UI into their daily lives. Modifying strategies include altering fluid intake, medications, toileting, physical activities, sexual practices, use of pads and devices, social activities, clothing, the environment and the way an individual conceptualizes their UI.

People who experience UI frequently modify or manipulate their fluid intake,[31] either increasing[39] or decreasing[25,50] intake. They also alter the timing of fluid intake to ensure urine is passed before leaving home.[23, 31,42] Types of fluids consumed can be modified, for example, by replacing alcohol and caffeinated drinks.[25,26,42,50] Some participants use nutritional or home remedy strategies such as vitamins, calcium, zinc, white willow bark, cherry juice and pickle juice.[41,35,48] There is also evidence that people with UI alter medication[26,39] amounts and timing as a modification strategy. Individuals may take a particular medication[39,53] or omit a dose of a drug,[41,26,56] particularly before going out.

Many studies have identified that people with UI modify their toileting behaviors in order to achieve social continence. Strategies include scheduled or regular urination,[41,31,39] urination before leaving home or beginning a journey,[41,31,35] going to the toilet immediately on arriving somewhere,[41] frequent emptying of the bladder[8,24,25,26,29,35,41,43,44,50,56,57] and going to the toilet immediately when the need to urinate is perceived.[8,29] Mitteness and Barker[49] labeled the strategy of going to the toilet 'just in case' and maintaining an empty bladder[50,33] 'preventive peeing.' Talbot and coworkers[57] used the term 'dysfunctional continence' to describe behaviors such as very frequent toileting or getting up to the toilet at night. Although these strategies serve to maintain continence, they can have a negative impact on a person's social and physical health and bladder function if used over the long term.

People with UI modify many of the physical activities they undertake. For example, skiing may be continued, but jogging may be replaced with walking because it is less likely to cause urine leakage.[25,39,58,50] In order to improve bladder emptying, men may modify their typical voiding posture and sit rather than stand.[51] Pelvic floor exercises can be used as a modifying strategy to control leaking[50,48] and the pelvic

floor muscles may be routinely contracted before a maneuver likely to provoke urine loss, such as a cough or sneeze.[25, 50] Sexual activities may be planned,[59] with some voiding immediately before sexual intercourse because of a fear of UI,[58] while others use a towel in bed during sexual activity.[32] Over the longer term, some try to reduce weight.[33]

As people with UI learn about their condition, they often modify the way absorbent or collecting devices or containing strategies are used, based on the time of the day, and whether they are at home or out.[48] Product use is modified for specific activities known to cause leaking. [25,50] Available products may be modified to suit individual requirements, for example by using one pad inside another pad or combining home made pads with commercial products for improved comfort and cost saving.[35] Clothing will be altered,[60] changed more frequently[54] and laundered more often.[60] Underwear and pads will be bought in bulk for economy,[43] and slightly soiled underwear will be thrown away.[43]

The social and physical environment can have an important impact on UI. The environment may be modified to ensure easy cleaning, protect furniture and equipment,[43] enable better access to the toilet, and reduce the risk of being embarrassed in public. Close friends and same sex family members who are included in the secret,[41,61] can be recruited in management strategies. Women can play a significant role in their husbands' daily-living management of incontinence, for example by purchasing pads and helping with pad changes.[14,62]

To control negative feelings about the self[41] and integrate UI into their lives, people may redefine the meaning of incontinence[41] and modify the way they think about UI and the place it has in their lives. Paterson[14] described how people with UI revise their private identity by learning about anatomy and physiology, family history,

life events and rejecting cultural attitudes toward UI. People may manage UI in their lives by not thinking of it as a problem when it occurs at home (as opposed to outside the home) or ignoring accidents and continuing with normal activities[43,48] Other approaches include working to re-establish normality quickly, by clearing up immediately or throwing away slightly soiled underwear.[43] Many reconceptualise their idea of what UI is or modify their expectations about UI by minimizing its importance,[24, 43,59] renaming it,[43] getting used to it, putting up with it and learning how to manage it;[35,24] accepting urine loss as a normal part of the recovery process after surgery, or redefining what is considered 'wet' and 'dry',[51] and expanding the number and type of locations or receptacles in which it is OK to urinate.[49] Where trust has developed, people may gain support[23,63] and share experiences with others with the same problem.[56,63]

While social activities can be severely restricted, most people with UI use modifying, containing and concealing strategies in order to socialize outside the home. Although some will select only 'safe' outings or activities,[43] many are determined that UI will not change their lives and keep them at home.[35] Once people with UI have established modifying strategies that work for them, they will establish a routine[24,63] that gives some mastery and control over their condition. Modifying involves careful planning, particularly when out socially. People with UI will plan toileting at home and when out, [48] know when leakage is more likely to occur, [56] reorganize daily activities to void at home and ensure accidents only take place in private,[41] may drive themselves to a destination rather than take public transport[46] and on arriving at a destination, will immediately make an effort to locate[14,22,31,64] and then stay near a toilet.[22,26,31,] They may plan activities according to their proximity to toilets,[23,35,42,43,49,64] will generally make a conscious effort to find out where the toilets

are located, [8,14,24,25, 30, 50,42,56,54] develop a cognitive map of toilets in their area and neighbourhood.[35,43,49,50] Disabled toilets can be preferred because there is more space and privacy.[32]

Once at a destination, people with UI plan for the possibility that they may need extra pads, have an accident and/or need to dispose used pads and aids. This may require carrying changes of pads, underwear, cleansers, materials for disposal and/or clothing.[32,30,43,51,53,64]

DISCUSSION

The strength of this body of research is that it describes what people with UI actually do to manage UI in their daily lives. While some studies' sampling and designs enable conclusions to be drawn about the extent of particular activities and behaviors, many do not. While this limits our ability to draw conclusions about this under-researched area, it should be noted that this review sought information about how people behave in naturalistic settings. In particular, qualitative studies add to understanding because they provide rich and detailed descriptions. Further, we found the consistency of findings related to particular activities and behaviors across multiple studies striking. Although more research in this area is needed, these studies provide a picture of the difficulties and creative thinking people employ to manage UI in their daily lives.

The research also revealed that UI imposes multiple changes and restrictions in people's lives. While Containing and Concealing approaches are important for attaining social continence, they do nothing to address underlying conditions or reduce the chances of a UI episode. Modifying strategies, which are developed over

time, represent a proactive approach to taking control and managing to live more positively with UI, particularly in social contexts.

It is important to note that certain Modifying strategies used by people with UI may conflict with advice for good bladder management. Examples include toileting frequency, limiting fluid intake, altering medication regimens, and reducing physical activity. Professional advice is often not followed if people perceive it will result in an episode of incontinence. Further, if these modifying strategies are practiced over time, they may have a negative impact on both general health and lower urinary tract health.

Conclusions

Understanding the strategies used by people with UI has many implications for practice. Complying with advice related to good bladder habits may at times be difficult, especially when patients seek to engage in a full range of social activities. It is important to acknowledge the impact of UI on the patient's psychosocial health and how this effects their daily-living management. Advice about bladder management strategies should be tailored to each individual's condition and needs. Consideration should be given to the individual's contexts, relationships and perspectives and assistance provided in relation to physical, psychological and social issues. Advice should be differentiated for social and private contexts. In addition, clients should be provided with sufficient information and advice to enable them to make appropriate decisions about modifications that will enable them to live their daily lives more fully.

Key Points

1. Urinary incontinence is a common problem that has a major impact on physical, emotional and social health and wellbeing.
2. People with urinary incontinence use *Containing, Restricting, Concealing* and *Modifying* strategies to manage their everyday lives.
3. To achieve social continence, people with UI will modify fluids, medications, physical activity and bladder habits in ways that may have negative impacts over the long term.
4. Health professionals need to consider clients' social contexts, relationships and perspectives and provide differentiated advice for managing urinary incontinence in social and private contexts.

Key words: continence, daily living, elimination, fluid intake, self care, self management, urinary incontinence

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TABLE 1: DATABASES SEARCHED

Australian Public Affairs Information Service Health

Australian Family & Society Abstracts (FAMILY)

Australian Medical Index

Blackwell Synergy

Cumulative Index for Nursing and Allied Health Literature (CINAHL)

Cochrane Library

Connect

Current Contents Health & Society

Dissertation Abstracts

Embase

Expanded Academic

Health Reference Centre

Health Module

Health Reference Centre

Ingenta

Joanna Briggs Institute

Kluwer online

Meditext

ProQuest (all databases)

PubMed

Rural and Remote Health Database

Science Direct

Sociofile

Sociological Abstracts

SwetsWise

Web of Science

TABLE 2: CONTAINING, RESTRICTING, CONCEALING AND MODIFYING DAILY-LIVING MANAGEMENT STRATEGIES

Author, Date	Design, Sample/ Participants, Country	Findings Related to Daily-Living Management Strategies
Adams and associates.[48] 1994	Questionnaire; n=262/700 ♀with rheumatoid arthritis; $\bar{x}$ age 59 years; U.S.	*Containing:* Wear pads at home (52.2%) when out (43.5%); *Restricting:* Restrict fluids at home (19.6%) when out (34.8%); Limit outings (13.0%); Never away from home (2.2%); *Concealing:* Wear clothes to hide accidents at home (4.3%) when out (8.7%); In response to a leakage: Quickly change clothes at home (55.6%) when out (17.8%); Quickly change pads at home (48.9%) when out (22.2%); Get help at home (6.7%) when out (11.1%); *Modifying:* Plan toileting at home (15.2%) when out (30.4%); Don't think about having accidents at home (43.1%); Exercise to control leakage at home (10.9%) when out (4.3%); In response to a leakage: Ignore accidents continue with whatever I am doing at home (8.9%) when out (15.6%); Change plans at home (0%) when out (2.2%).
Anderson and associates.[56] 2008	Qualitative, interviews; n=11 ♀ attending primary health care centre; aged 66-89; Sweden	*Containing:* Use sanitary protection; *Concealing:* Choose carefully who knows; Take great care in personal hygiene to prevent odour; *Modifying:* Learn about own body; Know when leakage occurs; Refrain from using diuretics; Go to the toilet more often; Know the locations of toilets; Share experiences with others with the same problem.

Ashworth & Hagan[43] 1993	Qualitative interviews; n=28/40 young (25-40 years) or middle aged (41-55) mothers with UI; UK	*Concealing:* Secrecy; Conceal problem from close family members and health workers; Constant bodily vigilance as to: State of the bladder; Odour; Double-check with others for odour; Use vaginal deodorant and deodorised pads; *Modifying:* Special precautions become a way of life; Careful anticipation and mindfulness: Obsessive bladder emptying; Toilet route planning; Check accessibility of toilets everywhere; Select 'safe' outings or activities; Practicalities: Buy underwear and pads in bulk for economy; Carry spares; Choose suitable fabrics; Protect soft furnishings; Re-establish normality: Clear up immediately; Throw slightly soiled underwear away; Minimise the importance of UI or rename it: "I just leak","I'm not incontinent"; Pay studied inattention to the problem (some) eg. taking no protective action
Boyle and associates.[37] 2003	Randomised survey; n=4979 ♂; mild to moderate UI reported by 14.4% of ♂ in Birmingham, 16% of ♂ in Boxmeer, 7.3% of ♂ in Auxerre & 4.3% of ♂ in Seoul	*Containing:* Pad use increases with age (from 8% ages 40-49 years to 10% ages 70-79 years)
Brocklehurst[30] 1993	Randomised structured interviews; n=422 (297 ♀; 125 ♂) with UI of 4007 adults randomly sampled from 178 sites; aged ≥ 30; U.K.	*Containing:* Wear pads 8% (37/209) (4% men, 22% women; 22% (30-59yrs), 14% (≥60yrs); Spoke to spouse (13% (26/209) (11% men, 12% women; 14% (30-59yrs), 12% (≥60yrs)); Pelvic Floor activities (10% (21/209) (0 men, 13% women; 20% (30-59yrs), 3% (≥60yrs) *Restricting:* Drink less when going out (35% (146/422); Go out less (15% (65/422); Restrict activities such as lifting (10% (43/422) *Modifying:* Make a conscious effort to find out where public toilets are (33% (141/422); Carry spare underwear (13% (26/209) (0 men, 17% women; 19% (30-59yrs), 8% (≥60yrs)

Brown & Miller[8] 2001	Stratified randomised survey (ALSWH); n=1051/1500 randomly selected women with UI; 3 age groups (21-26, 48-53, 72-79 years); Australia	*Containing:* Wear protective pads: 17.4% (Young), 63.0% (Mid), 74.8% (Older); *Restricting:* Avoid sexual intercourse: 10.9%(Young), 10.6% (Mid), 13.2% (Older); Cut down on drinking liquids (eg. water, tea, coffee): 24.2% (Young), 33.8% (Mid), 42.2% (Older); Avoid sporting activities: 6.7%(Young), 38.0% (Mid), 27.5% (Older); Avoid previous recreational activities: 4.5% (Young), 25.6% (Mid),19.1% (Older); Avoid wearing certain clothes: 14.9% (Young), 28.0% (Mid), 24.6% (Older); *Modifying:* Go to the toilet just in case: 48.2 % (Young), 66.0% (Mid), 74.1% (Older); Rush to the toilet urgently: 36.4%(Young), 50.3% (Mid), 74.1% (Older); Go more than twice in one night: 34.9%(Young), 41.3% (Mid), 67.4% (Older); Make conscious effort to find out location of public toilets: 26.0%(Young), 48.0% (Mid), 62.8% (Older)
Dowd[24] 1991	Qualitative, interviews; n=7 ♀ aged 58-79 years; U.S.	*Containing:* Wear pads; *Restricting:* Travel; Socialising; *Concealing:* Body vigilance for odour; *Modifying:* Develop routines; Plan ahead; Minimise the importance of UI; Become proficient at continence care; Know where all the toilets are; Change timing of fluids; Go to the toilet frequently; Wear different clothing.
Eastwood and associates.[23] 2002	Qualitative; n=8; focus groups of ♀ & ♂ with multiple sclerosis, aged 43-68 years; Australia	*Containing:* Use pads; Use bottles; *Restricting:* Avoid crowded places; Restrict fluids; Avoid caffeine and alcohol; Employment; *Concealing:* Hide reason for frequent trips to toilet; Keep UI a secret; *Modifying:* Plan life around toilets; Manage myself; Be in control; Seek understanding; Use distraction; Time fluid intake; Use of clothing; Toilet before and after social events.
Engberg and associates.[26] 1995	Randomised ex-post facto survey (RHIPP); n= 147/372 ♀ reporting UI; aged 67-83 years; U.S.	*Containing:* Wear protective garment (51%); *Restricting:* Fluid intake (50%); Social activity (8%); Physical activity (7%); *Modifying:* Stay near toilet when out (56%); Void more frequently (55%); Do pelvic floor exercises (32%); Alter type of fluids (39%); Alter medications (23%).

Fultz and associates.[53] 2005	Surveys mailed to 5130 households. 3364 ♀ provided usable data (66%); age range 18-60; U.S.	*Containing:* Use pads, other absorbent material. *Restricting:* Avoid caffeinated beverages; Avoid lifting, bending or reaching; Limit fluid intake to keep bladder empty; *Concealing:* Take frequent bathroom breaks while at work; Use perfume, deodorant spray/dusting powder; *Modifying:* Do pelvic floor muscle exercises at work; Keep extra clothes or underwear at work; Take prescription medication to treat urine loss; wear special or dark clothes.
Hagglund and associates.[33] 2003	Telephone survey; n=58/95 ♀ with persistent UI who had not sought help; age range 23–51 years; Sweden	*Containing:* Wear protective pads/ sanitary towels/ panty liners (53%); *Restricting:* Avoid activities associated with urine loss (9%); *Modifying:* Maintain an empty bladder (19%); Pelvic floor exercises (55%); reduce weight (3%).
Hägglund & Wadensten[59] 2007	Qualitative, purposely selected; n=13♀ who had not sought professional help for UI; Sweden	*Concealing:* Conceal problem; Reluctant to speak to people about UI or seek help *Modifying:* Plan sexual activities; Minimise the UI problem; Put UI out of your mind.
Herzog and associates.[31] 1989	Stratified area-probability sample of households (MESA) respondents with UI; n=512 ♀&♂; ≥60 years; US	*Containing:* Use absorbent products (sanitary napkins, toilet tissue, absorbent garments) (47% - 55% ♀; 20% ♂); *Modifying:* Practise 'voiding manipulation' (scheduled urination, urination before leaving home, other conscious efforts to plan urination) (29%); Locate toilets upon arrival at unfamiliar places (42%); Practise diet/fluid manipulation (17%); Pelvic floor exercises (10%).
Irwin and associates.[65] 2005	Population based survey participants with symptoms of overactive bladder symptoms; n=1272/11521; aged 40-64 yrs; France, Germany, Italy, Spain, Sweden & UK	*Restricting:* Affected decisions about work location and hours, interrupted meetings for toilet breaks (38% ♂; 33% ♀); voluntary termination or early retirement from work (27% ♂; 4% ♀).

Kim and associates.[66] 2008	Survey; *n*=228 ♀ with a history of gestational diabetes; U.S.	*Restricting:* UI interferes with physical activities (27%).
Koch and associates.[42] 2000	Qualitative; n=4 ♂ with multiple sclerosis and UI; aged 48-62 years; Australia	*Containing:* Use intermittent catheterisation, leg bags; *Restricting:* Regulate oral intake, reduce caffeine and alcohol intake; *Concealing:* Make excuses to others about frequent toileting; Splash water on front to cover urine stains; *Modifying:* Plan your life around toilets; Always know where toilets are.
Lam and associates.[28] 1992	Random population sample participants with UI symptoms n=511/2631 ♀; age 29-59 years; Denmark	*Restricting:* One or more types of abstention from social activity (19%); Two or more abstentions (6%) including going to work, visiting friends, going to the cinema, engaging in sport, shopping; Abstain from non-intimate social activity (17%); Abstain from sexual intercourse (6%).
Locher and associates.[22] 2002	Convenience sample with UI, interviews; n=74 ♀; age 49-84years; US	*Containing:* Wear pads: 61%; *Restricting:* Limit fluid intake: 51%; Drink only certain fluids: 39%; *Modifying:* Stay near a bathroom: 54%.
MacInnes[60] 2008	Qualitative, telephone interviews; ♀ with UI who had failed to complete therapy at a nurse-led continence clinic; n=12; U.K.	*Containing:* Financial burden of purchasing pads; *Restricting:* Did not attend the clinic due to stigma; Social life; Personal relationships; Working life; *Modifying:* Alter clothing; Increased laundry.
Maliski and associates.[63] 2001	Qualitative, interviews; husband/wife couples from a larger clinical trial; n=20; ♀ aged 28-79, ♂ aged 51-71 years; US	*Modifying:* Establish a routine; Work together to overcome UI; Providing support; Develop mastery and control; General and pelvic floor exercises; Networking with others who have same problem.

Miller and associates.[29] 2003	Stratified randomised survey (ALSWH) selected from mid-aged ♀ (45-50 years) (n=410/500) and older ♀ (70-75) (n=400/500) study participants who reported leaking urine; Australia	*Restricting:* Wear pads (mid-aged 63%; older 74%); Fluid intake (mid-aged 33%; older 42%); Avoid sporting activities (mid-aged 38%; older 27%); Avoid wearing certain clothes (mid-aged 28%; older 24%); Avoid sexual intercourse (mid-aged 11%; older 13%); Avoid public transport (mid-aged 9%; older 20%); avoid leaving the house (mid-aged 3%; older 10%); refuse invitation to go out (mid-aged 5%; older 12%); see less of your friends (mid-aged 2%; older 7%); *Modifying:* Go to toilet 'just in case' (mid-aged 66%; older 74%); Rush when you get the urge (mid-aged 50%; older 74%); Identify location of toilets (mid-aged 48%; older 62%).
Mitteness[41] 1987	Qualitative, ethnography; n=30/44 ♀ & ♂ with UI living in subsidised apartments; aged 41-97years; US	*Containing:* Use pads; pants, towels, catheters, bottles; *Restricting:* Stay home; Avoid crowded places; Restrict fluids; Avoid caffeine and alcohol; Employment; *Concealing:* Control information about self to health professionals and others until trust established; hyper-vigilance with respect to wetness or evidence of accidents; *Modifying*: Do pelvic floor exercises; Plan daily activities to void at home; Go to the toilet frequently; Alter timing of diuretics; Regular toileting; Toilet immediately upon arrival at a destination, Redefine incontinence (wetting the floor or clothing); Reorganise daily activities to ensure accidents only take place in private; Use nutritional strategies (vitamins, calcium, zinc, white willow bark or cherry juice); Regularly launder clothing and bedding more often and 'just in case it smells'; Develop cognitive map of toilets in local area; Control negative feelings about self; Use pads differently depending on whether home or out.
Mitteness & Barker[49] 1995	Qualitative, interviews (6 interrelated studies); n=255 community-living elderly with UI; elderly people; US	*Containing:* Use urine collection devices: rags, pads, adult diapers, absorbent sheets, cans, posts or urinals; *Restricting:* Restrict activities to private space; *Concealing:* Control information about the self; Reveal only to close friends/family; *Modifying:* 'Preventive peeing'; Schedule activities by proximity to toilets; Expand number and type of locations or receptacles in which it is OK to urinate; Cognitive map of toilets in area/neighbourhood; Believe that UI is normal.

O'Connell and associates.[54] 2007	Questionnaire, convenience sample of ♂ who had undergone prostate surgery ≤1 year previously; n=212; aged ≥ 18 years; Australia	*Containing:* Wear pads; *Restricting:* Drink less fluid; UI has affected shopping, activities, ability to travel; sexual relationships, recreational activities, physical activities, employment, having visitors at home; social relationships and activities; *Modifying:* Accepting it; Regular toileting; Know where the toilets are; Wear dark clothing; Change clothes more frequently; Modify clothing choice.
Palmer and associates.[39] 2002	Survey of working ♀, Settings: A–Academic (n=1120); B–Manufacturing (n=265); $\bar{x}$ age 45yrs; US	*Containing:* Use tissue paper (A=28.5%; B=25.3%), Panty liners (A=58.3%; B=77.8%), Sanitary napkins (A=20.3%; B=30.6%), Special undergarments (A=1.6%) and special pads to manage UI (A=5.7%; B=3.5%); *Restricting:* Limit fluids (A=25.3%; B=32.8%); *Modifying:* Voiding schedule (A=28.1%; B=10.9%); Drink extra fluids (A=25.3%; B=5.4%); Medications (A=2.6%; B=5.4%); Pelvic floor exercises (A=44.0%; B=28.8%)
Paterson[14] 2000	Qualitative; n=3; ♂ with UI following prostatectomy; aged ≥ 60 years; Australia	*Containing:* Wear pads; *Restricting:* Plan activities around toilet stops; Stay at home; Avoid activities that exacerbate UI; *Concealing:* Keep it a secret, except from those who are close *Modifying:* Know all toilet locations when going out; Revise private identity through knowledge of anatomy and physiology, family history, life events and rejection of cultural attitudes toward UI; Pelvic floor muscle exercises.
Peake & Manderson[32] 2003	Qualitative, n=75 ♀ with UI recruited from other study; age 40-60 years; Australia	*Containing:* Use aids/pads: menstrual pads and babies nappies (sometimes); Menstrual pads - considered more 'normal'; Paper bags for disposal to conceal contents; *Restricting:* Avoid orgasm during intercourse for fear of leaking (some); Avoid new relationships (some); *Concealing:* Manage odour; *Modifying:* Use disabled toilets - more room; Travel with spare pads, plastic bag for disposal and change of underwear; Use towel in bed during sex.

Sandvik and associates.[44] 1993	Structured interview n=187/252 ♀ responding to a marketing campaign about UI; aged 19–91 years; Norway	*Containing:* Use menstruation pads (57%), incontinence pads (42%), children's napkins: (14%), plastic bedcovers (14%), cotton (11%), toilet paper (11%). used towels (9%); *Restricting:* Restrict drinking (17%); Some or considerable restriction: lifting heavily (60%), sport (55%), travel (40%), dancing (35%), going to the cinema (30%), shopping (30%), visiting friends (30%), wearing desired clothing (20%), working (15%), entertaining guests (10%); *Modifying:* Visit toilet frequently (33%); Wear special clothing (3%)
Skoner[25, 50] 1993;1994	Qualitative, interviews, n=8 women with UI; aged 31-50 years; US	*Containing:* Wear pads; incontinence pads a last resort - when UI cannot be contained by sanitary pads (less costly and bulky); *Restricting:* Avoid strenuous exercises (eg. aerobics and running); Alter physical activities; Limit fluid intake particularly before exercising or going place with no toilets nearby; Avoid or limit beverages associated with UI (eg. tea, coffee); *Modifying:* Keep bladder empty by urinating frequently, limiting fluid intake, or both (particularly before exercising or where there are no toilets nearby); Know where every public toilet in locality is; Do pelvic floor muscle exercises; Modify physical activities, eg. continue skiing, substitute walking for running, stop swimming completely; Contract pelvic floor muscles before a cough or sneeze; Use pads for specific activities known to cause leaking; Drink de-caffeinated tea and coffee.
Stoddart and associates.[34] 2001	Survey, stratified random sample of community living ♀&♂; n=1540 / 2000; aged 65 years; UK	*Containing:* Mini-pads (1% Male, 22% Female); Sanitary pads (1% Male, 10% Female); Incontinence pads (5% Male, 14% Female); Change clothes (51% Male, 36% Female); Use paper (13% Male, 12% Female); Medication (11% Male, 5% Female); Exercises (8% Male, 21% Female)
Tannenbaum and associates.[67] 2006	Randomly selected from postal survey participants *n*=2361/5000 ♀; continent *n*=1436; incontinent *n*= 925; aged 55-95 ($\bar{x}$ = 71)	*Restricting:* Some subsets of women experiencing UI appear to be less likely to engage in sexual activity than continent women.

Teunissen and associates.[64] 2006	Qualitative/ quantitative analysis of interview data; *n*=370 (56♂, 314♀); with uncomplicated UI; aged ≥60; recruited from client populations of nine family practices	*Containing:* Wear pads; *Restricting:* Going places when uncertain about availability of toilets (31-37%); Physical activities (10%); Shopping and outdoor activities; Imposed clothing restrictions (♂); Carrying or lifting; Avoid leaving home; *Concealing:* Prevent odours; *Modifying:* Stay near toilet; Take extra pads and clothing when leaving the house; Always look for a toilet; When shopping, plan route to be near toilets.
Thomas & Morse[35] 1991	Semi structured telephone interviews; *n*=60 (53 ♀, 7♂) living independently with UI; aged 51-88 years; Canada	*Containing:* Use sanitary pads or commercial incontinence garments; use a combination of sanitary pads, commercial garments, or homemade pads; *Restricting:* Feel restricted in their daily activities (11.6%); Do not significantly reduce activity outside of the home (83%). Many were determined that UI would not keep them at home; Drink more fluids (12%); Reduce fluids (20%); *Concealing:* Tell no one about the problem (15%); Hygiene was particularly important for those respondents who expressed feeling embarrassed because of odour or leakage *Modifying:* Discuss problem with someone close (70%); Void before leaving home; Plan trips in relation to availability of a toilet; Frequent or regular toileting; Consider UI as something you just "got used to", "learned how to manage" and "put up with"; Practise pelvic floor exercises; Unusual strategies included: drink pickle juice as a bladder astringent; take hot baths; wear warm clothes to prevent 'chilling of the kidneys.'
Umlauf and associates.[40] 1996	Survey, *n*=1490/2800 community-dwelling ♂ from a senior citizens group; aged 52-99 years; U.S.	*Containing:* Of 20% of sample responding to question on product use (n=127/434) the men used: toilet tissue (28%), paper towels (16%), adult diapers (22%), sanitary pads (9%), panty liners (9%), absorbent cloth (6%); *Restricting:* Do not stand for long periods; Limit caffeine use;