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Abstract

Aim: To evaluate factors influencing uptake and delivery of behavioural interventions for urinary incontinence from the perspective of clients and clinical staff.

Background: Behavioural interventions are recommended as first-line therapy for the management of urinary incontinence. Barriers to and enablers of uptake and delivery of behavioural interventions have not been reviewed.

Design: Qualitative evidence synthesis.

Data sources: MEDLINE, EMBASE, CINAHL, PsychInfo, AMED (inception to May 2013); Proceedings of the International Continence Society (ICS) (2006-13).

Review methods: Studies where data were collected from clients or staff about their experiences or perceptions of behavioural interventions were included. Two reviewers independently screened records on title and abstract. Full-text papers were obtained for records identified as potentially relevant by either reviewer. Two reviewers independently filtered all full-text papers for inclusion, extracted findings and critically appraised studies. We used an approach akin to Framework, using a matrix of pre-specified themes to classify the data and facilitate its presentation and synthesis.

Results: Seven studies involving 200 participants identified clients' views. Findings identified from at least one study of moderate quality included increased fear of accidents and convenience of treatment. Factors enabling participation included realistic goals and gaining control.

Six studies involving 427 participants identified staff views. Findings identified from at least one study of moderate quality included staff education and perceptions of treatment effectiveness. Enabling factors included teamwork and experience of success.

Conclusion: There is little detailed exploration of clients' experiences of and responses to, behavioural interventions. Evidence for staff relates predominantly to prompted voiding in long-term residential care. Studies of the uptake and delivery of other behavioural interventions in other settings are warranted.

Keywords: qualitative evidence synthesis, systematic review, urinary incontinence, management of incontinence, behavioural interventions, nursing, bladder training, prompted voiding, pelvic floor muscle training

Summary statement

Why is this review needed?

- Behavioural interventions are recommended as first-line therapy for the management of urinary incontinence.
- The barriers to and enablers of uptake and delivery of behavioural interventions from the perspective of clients and clinical staff have not been reviewed.

What are the key findings?

- Clients' views of barriers to participation in behavioural interventions included increased fear of accidents and convenience of treatment.
- Client factors enabling participation in behavioural interventions included having realistic goals and expectations and gaining a sense of control.
- Staff views of barriers to adopting behavioural interventions included staff education and perceptions of treatment effectiveness. Staff factors enabling the adoption of behavioural interventions included teamwork and experience of success.

How should the findings be used to influence policy/practice/research/education?

- Further research exploring clients' experiences of and responses to, behavioural interventions is warranted.
- Further research into staff experiences of delivering behavioural interventions in a range of settings is recommended.

- Findings from the review were used to inform delivery of the intervention in the ICONS: Identifying Continence OptioNs after Stroke randomised controlled feasibility trial.

INTRODUCTION

Urinary incontinence (UI), defined as 'involuntary loss of urine' (Abrams *et al.* 2002), is common in the general population and can affect people of all ages. More than one in three people over 40 years of age reported symptoms of bladder problems in a large survey by Perry *et al.* (2000), although most did not find their symptoms sufficiently bothersome to seek help.

UI following stroke is common, with prevalence estimates suggesting around half of stroke survivors are affected in the acute phase and findings similar across countries (Lawrence *et al.* 2001, Nakayama *et al.* 1997, Kolominsky-Rabas *et al.* 2003). As many as 43.5% and 38% stroke survivors remain incontinent at three months and one year respectively (Williams *et al.* 2012). In longer term stroke survivors (on average nine years post-stroke), prevalence has been reported as 17% (Jorgensen *et al.* 2005).

Damage to the pontine micturition centre or higher centres, particularly the medial aspects of the frontal lobes of the brain, can disrupt micturition pathways leading to impaired bladder storage and voiding (Panicker *et al.* 2010). Urge incontinence is the most common type after stroke *(Pettersen et al.* 2007) and is generally the result of detrusor overactivity (Arunabh & Badlani 1993). Associated stroke impairments may compound difficulties with bladder control with motor, visual, mood or speech problems making the practical task of access (or requesting access) to toilet facilities a challenge (Brittain *et al.* 1999).

Problems with continence have been shown to be amenable to early intervention, particularly in the three months following stroke (Marinkovic & Badlani 2001). Stroke outcome may be better in those stroke survivors who remain continent or regain continence (Barer 1989). While there are problems with attributing better stroke outcome to improvements in continence, it is possible early intervention aimed at promoting recovery from incontinence may improve morale and self-esteem and therefore speed overall stroke recovery (Barer 1989, Patel *et al.* 2001). It is also possible that the recovery of continence reduces barriers to participation in rehabilitation activity.

In this paper we report findings from a qualitative evidence synthesis which aimed to identify barriers to and enablers of the successful uptake and delivery of behavioural interventions from the perspective of clients and clinical staff. The review formed part of the ICONS: Identifying Continence OptioNs after Stroke Programme Grant for Applied Research funded by the National Institute for Health Research (Thomas *et al.* 2015). The programme was structured in line with the Medical Research Council (MRC) framework for the evaluation of complex interventions (Medical Research Council 2000, Medical Research Council 2008); this review was undertaken as part of the MRC development phase and updated in 2013.

Background

Despite the availability of clinical guidelines for the management of UI in women (National Collaborating Centre for Women's and Children's Health 2013) and after stroke (Intercollegiate Stroke Working Party 2012), national audit data suggest incontinence is often poorly managed. In the latest Sentinel Stroke National Audit Programme (SSNAP)[Royal College of Physicians 2014], 17% of incontinent patients did not have a plan for continence management within three weeks of arrival on the stroke unit, a statistic described by the authors as 'terrible'.

While continence is already recognised as a component of organised stroke care, it is known that nurses find managing continence in the context of stroke challenging (Booth *et al.* 2009), with over-reliance on urinary catheterisation as a management strategy especially in the acute phase of illness Cowey *et al.* 2012). There are medical therapies (e.g. antimuscarinic medications such as Oxybutinin; posterior tibial nerve stimulation) which can be appropriately used to assist continence but these need to be based on appropriate first line assessment and behavioural management in line with national guidelines (Intercollegiate Stroke Working Party 2012).

Behavioural interventions are recommended as first-line therapy for the management of UI (Intercollegiate Stroke Working Party 2012, National Institute for Health and Care Excellence 2012). These include bladder training (Wallace *et al.* 2004), timed voiding (Ostaszkiewicz *et al.* 2004b), prompted voiding (Eustice *et al.* 2000), habit retraining (Ostaszkiewicz *et al.* 2004a) and pelvic floor muscle training (Dumoulin *et al.* 2014).

The effectiveness of behavioural interventions has been systematically reviewed in adults. The review of timed voiding (Ostaszkiewicz *et al.* 2004b) included only two trials of poor methodological quality and concluded there was no empirical evidence for or against the intervention. Similarly, the review of habit retraining (Ostaszkiewicz *et al.* 2004a) found insufficient evidence of an effect on continence outcomes to recommend this approach. In the review of bladder training (Wallace *et al.* 2004), trials tended to favour bladder training and there was no evidence of adverse effects. The review of prompted voiding (Eustice *et al.* 2000) found evidence of increased self-initiated voiding and decreased incontinent episodes in the short-term. Pelvic floor muscle training may also be effective in assisting the individual to manage urge, stress or mixed incontinence (Dumoulin *et al.* 2014) and has been shown to be effective as a

combined intervention with bladder training ADDIN REFMGR.CITE (Williams *et al.* 2005; Wyman *et al.* 1998).

A meta-study of systematic reviews of behavioural interventions has called for clarity in the theory underpinning the use of behavioural interventions for urinary incontinence *(Roe et al.* 2007b*; Roe et al.* 2007a). In addition, the conditions and contexts for successful implementation of behavioural interventions for UI have not been reviewed.

THE REVIEW

Aim

To evaluate the evidence for factors influencing uptake and delivery of behavioural interventions for urinary incontinence in the general adult population from the perspective of clients and clinical staff to inform the design of an intervention specific to UI post-stroke.

Design

Qualitative evidence synthesis adhering to the ENTREQ reporting guidelines (Tong *et al.* 2012).

Search methods

The review included studies collecting data from adult clients or staff about their perceptions or experiences of behavioural interventions, including information on factors influencing:

- choice or uptake of behavioural interventions for UI
- adherence to/maintenance of a behavioural programme

- withdrawal/dropout from a behavioural programme

Studies exploring client experience of self-management strategies for UI in general were excluded if behavioural interventions were not referred to specifically. Studies were also excluded if the urinary incontinence related to a temporary condition such as pregnancy (UI within 12 months of childbirth was excluded), or a non-behavioural treatment such as surgery (e.g. prostatectomy). Included study designs were qualitative studies and qualitative components of quantitative surveys.

The search strategy was pre-planned (rather than iterative) and drew on the search developed by the Cochrane Incontinence Review Group for terms related to urinary incontinence and from previous Cochrane reviews on behaviour change. These were combined and then limited for exclusions related to age (non-adult) and language (non-English). The search was designed for MEDLINE (Appendix 1) and then adapted for other databases. We searched MEDLINE, EMBASE, CINAHL, PsychInfo, AMED from inception to May 2013 and Proceedings of the International Continence Society (ICS) (2006-13). We undertook forward and lateral citation searching via ISI Web of Knowledge for all included studies. The search strategy was developed to locate all relevant studies for the whole series of reviews for the ICONS Programme Grant (including a review of effectiveness) (Thomas *et al.* 2015).

Search outcome

The main database search identified 12,900 records (Figure 1). Another 47 records were added from conference proceedings, plus 72 records from secondary references. After removal of duplicates and clearly irrelevant titles, 3236 records were screened. Of these, 620 full text papers

were retrieved. Five records could not be traced. Studies originally deemed eligible but subsequently excluded are detailed in Appendix 2. Thirteen studies were eligible for the review.

Quality appraisal

Quality assessment was based on quality criteria for qualitative studies or observational designs (Critical Appraisal Skills Programme, 2013) including criteria related to participant selection and representativeness, data collection and analysis, methods of representation and testing the robustness of findings. The National Institute for Health and Care Excellence (2007) quality classification was used as follows:

- studies where the credibility of the findings are unlikely to be affected by any weaknesses in study design or conduct (++);
- studies where weaknesses in study design or conduct have the potential to impact on the credibility of the findings (+);
- studies where the credibility of the findings is likely to be affected by weaknesses of study design or conduct (-).

Data extraction

After removal of duplicate records and records obviously not relevant to the review by one reviewer, two reviewers independently screened the remaining records on title and abstract. Full-text papers were obtained for screened records identified as potentially relevant by either reviewer. Two reviewers also independently filtered all full-text papers for inclusion, using a filtration pro-forma.

Data extraction templates were designed with outcome formats and criteria for critical appraisal, together with coding frames and guidance. After training and inter-rater reliability checks for coding and quality assessment, critical appraisal and data extraction were undertaken independently by two reviewers. Disagreements were resolved through discussion; on no occasion was it necessary to consult a third reviewer.

Two reviewers (BF, LT) independently checked descriptive data, extracted findings and critically appraised the studies. Data were extracted on client group recruitment and inclusion criteria, research design and methods, behavioural intervention and findings.

Synthesis

Findings were identified from second order constructs, i.e. the study authors' aggregate themes, categories or codes relating to potential barriers to and enablers of behavioural interventions. Findings were categorised based on Davidson *et al.* (Davidson *et al.* 2003) and National Institute for Health and Care Excellence guidance on interventions to support behaviour change (National Institute for Health and Care Excellence, 2007). These included:

- intervention type (i.e. bladder training [BT], pelvic floor muscle training [PFMT], prompted voiding [PV]);
- influencing factor source: client, therapy or context;
- direction: barriers or enablers;
- outcome (choice/uptake, participation/adherence, longer-term sustainability and withdrawal/drop-out).

We used an approach akin to Framework (Dixon-Woods 2011), using a matrix of pre-specified themes to classify the data and facilitate its presentation and synthesis. As the purpose of the review was to inform delivery of behavioural interventions in practice, analytical categories were imposed by us rather than being inherent in the original data, in contrast to the thematic approach developed by Thomas & Harden (2008) where descriptive themes are generated from the data.

All relevant text from included studies under the headings 'results' and 'conclusions' were summarised and entered onto the data extraction form under the pre-specified headings of intervention type, influencing factor source and outcome. In each of these headings, summarised text was coded as either a barrier or a facilitator. Issues of classification and interpretation of the original data need to be taken into account when reading the synthesis, as does the inevitable loss of detail when summarizing studies.

Stakeholder involvement in the review process

The ICONS Review Management Group met quarterly during the review process and their input included feasibility testing the data extraction proforma, checking back to the original study data from the results to comment on robustness of interpretation and reading and commenting on all review outputs. The ICONS Patient, Public and Carer Group were involved at three stages for consultation on the review: to advise on the parameters and scope of the review; to consider the draft results of the review in terms of identifying mediating factors for the feasibility trial; and to assist in the translation of the findings into practical guidance. The review findings were presented to the ICONS Trial Management and Steering groups who made suggestions for optimal conditions for delivery; these informed tailoring of the intervention to client groups and

settings in the feasibility trial of combined behavioural interventions for the management of urinary incontinence after stroke in adults.

RESULTS

Findings relating to client and staff experience are reported separately.

Description of studies of client experience

Seven studies of client views or experiences were identified (Table 1). Two studies mainly referred to factors influencing choice/uptake of UI treatments in older people in residential care (Johnson *et al.* 2001, O'Dell *et al.* 2008). Three studies provided information about factors influencing participation and adherence to behavioural therapies (Milne & Moore 2006, Hay-Smith *et al.* 2007, Sarma *et al.* 2009) and two studies focused on reasons for drop-out from a UI treatment programme (Kincade *et al.* 1999, MacInnes 2008).

There were six qualitative studies and one survey. All studies collected data from clients, but Johnson *et al.* (2001) used postal questionnaires to collect data from proxy respondents who did not themselves have urinary incontinence and also collected data from family members and nursing staff. The samples for two studies were designed to include both men and women , the rest included women only. Kincade *et al.* (1999) included both men and women in the overall study, but only interviewed women who had not completed their programme. Two studies targeted older adults: community dwelling (Johnson *et al.* 2001) and in residential care (O'Dell *et al.* 2008). Three studies were specific to women with stress urinary incontinence (Hay-Smith *et al.* 2007, MacInnes 2008, Sarma *et al.* 2009); the remaining studies included people with mixed

types of urinary incontinence. One study did not exclude participants who were continent at the time of interview (9/38 participants reported no or rare wetness), but who had experience of self-care strategies (Milne & Moore 2006).

Two studies were not specific to a particular type of behavioural intervention, but included material relevant to uptake of or adherence to behavioural self-care strategies (Milne & Moore 2006, O'Dell *et al.* 2008). One study elicited preferences for treatment, including behavioural options (Johnson *et al.* 2001). Three studies concerned client experiences with pelvic floor muscle training (PFMT) (Hay-Smith *et al.* 2007, MacInnes 2008, Sarma *et al.* 2009); and one study concerned client experience of a combined intervention using both PFMT and bladder training (Kincade *et al.* 1999).

One study explored the treatment preferences of frail older nursing home residents (Johnson *et al.* 2001); and two studies explored reasons for drop-out/withdrawal from treatment ((Kincade *et al.* 1999, MacInnes 2008). The remaining four (Milne & Moore 2006, Hay-Smith *et al.* 2007, O'Dell *et al.* 2008, Sarma *et al.* 2009) studies were more wide ranging, covering factors influencing uptake and/or adherence.

Quality and generalisability of included studies: Two studies met most of the appraisal criteria, where any weaknesses were unlikely to impact on the credibility of findings (Milne & Moore 2006, Hay-Smith *et al.* 2007). Two studies had weaknesses mainly in the description of analysis such that weaknesses had the potential to impact on the credibility of the findings (Kincade *et al.* 1999, O'Dell *et al.* 2008). The qualitative methods in three studies were poorly described (Johnson *et al.* 2001, MacInnes 2008, Sarma *et al.* 2009).

The included studies are mostly generalisable only to women. All of the studies required participants to be cognitively able to participate. In the main, sampling was purposive or a self-selected volunteer sample. Two studies drew samples from US residential care (Johnson *et al.* 2001, O'Dell *et al.* 2008), so findings may not be generalisable to other care systems. Two studies focus on relatively younger women with stress urinary incontinence (Hay-Smith *et al.* 2007, MacInnes 2008); one study (Sarma *et al.* 2009) also includes women with stress urinary incontinence but the age range is not reported. Two studies focus on older women (Kincade *et al.*1999, Milne & Moore 2006) with mixed types of incontinence. The study by O'Dell *et al.* (2008) included residents with pelvic floor dysfunction where 23 people out of 25 had urinary incontinence, but 13 out of 25 also had other problems. However, findings are defined by the different conditions and in the main it is clear when findings are referring to urinary incontinence. Johnson *et al.* (2001) included proxy respondents without urinary incontinence.

Findings related to the choice/uptake of behavioural treatments

Table 2 details the results of the three studies considering factors impacting on choice or uptake of behavioural treatments for UI (Johnson *et al.* 2001, O'Dell *et al.* 2008, Sarma *et al.* 2009). Two studies considered the treatment preferences of older adults in long term care facilities in the USA (Johnson *et al.* 2001, O'Dell *et al.* 2008), while Sarma *et al.* (2009) interviewed women with stress urinary incontinence attending a tertiary urogynaecology unit in Australia about perseverance with pelvic floor muscle exercises. Results suggest that clients may have a higher tolerance for symptoms and a lower tolerance for disturbance, with a preference for interventions promoting independence and comfort and resistance to any invasive intervention. Behavioural interventions such as prompted voiding can be viewed as embarrassing and resulting in

dependence on others, with residents in care facilities disliking the subsequent reliance on nursing staff.

Participation/adherence

Table 3 details the results of three studies considering factors impacting on participation in and adherence to behavioural interventions. Two studies (Hay-Smith *et al.* Sarma *et al.* 2009) were specific to PFMT, while Milne & Moore (2006) referred to client factors impacting on adherence to both BT and PFMT.

For BT, a barrier to adherence was increased fear of accidents, while for both BT and PFMT, respondents identified difficulty with developing a routine and fitting the intervention into daily life, but a feeling of mastery and control if successful. Enablers included realistic goals and adaptation of daily routines.

There were negative perceptions of PFMT, including the difficulty of learning the exercises and knowing whether they were done correctly. Respondents valued feedback and follow up. Contextual features that impacted on adherence included the requirement for privacy. All three studies were conducted with women; two were specific to women with stress UI (Hay-Smith *et al.* 2007, Sarma *et al.* 2009).

Withdrawal/drop-out

Two studies considered women's reasons for withdrawal from behavioural UI programmes where PFMT was a major component. The findings are detailed in Table 4. Women cited other health problems, competing pressures, the inconvenience of attending clinics and negative

perceptions of PFMT as barriers. Because of the difficulty of knowing whether practice was successful, feedback was viewed as helpful by some respondents in both studies. Both of these studies were completed on non-attenders of established continence clinics, so the results may not be generalizable beyond these specific examples.

Summary: client experiences

Client factors: Uptake and maintenance of behavioural therapies could be affected by clients' values and lifestyle preferences, prior experiences with behavioural therapies and their perceptions of the potential consequences - both positive and negative. Adherence was helped by having realistic goals and expectations and experiencing the positive consequences of success.

Intervention factors:

Limitations of the review process

The synthesis of qualitative data is not a straightforward mechanical process and some issues were encountered that need to be taken into consideration when reading the review findings. In the main, we identified the study authors' themes, categories and codes as findings, i.e. secondary data. Identified factors could therefore be based on one or many respondents' views and we have not differentiated or made any interpretation of relative importance or size of impact. We have only grouped similar or related factors and identified where multiple studies have described the same factor. Factors were classified as barriers and enablers but many more barriers were identified than enablers and sometimes factors could be interpreted as either. Factors were also classified as relating to different stages in the process of treatment: uptake,

participation and withdrawal. We used our judgement to assign factors to the most appropriate stage or direction of effect. Where it was possible to infer from the original, factors are reported as related to a specific therapy such as prompted voiding, but some studies were more related to generic management of incontinence with behavioural therapy.

CONCLUSION

There is very little detailed exploration of clients' experiences of and responses to, behavioural interventions, with the exception of one in-depth study focussing on PFMT. Similar in-depth research on clients' experiences of other types of behavioural interventions are warranted to understand why people do or do not adhere to these therapies. Evidence of staff experiences is limited to nursing staff and relates predominantly to prompted voiding in long-term residential care; there are no studies evaluating the delivery of behavioural interventions in rehabilitation settings. Studies of the uptake and delivery of other behavioural interventions in other settings are warranted.

Author Contributions:
All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE*):
1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
2) drafting the article or revising it critically for important intellectual content.
* http://www.icmje.org/recommendations/

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Appendix 1: MEDLINE search strategy

1. exp urinary incontinence/

2. Urination/ or urodynamics/

3. Urinary catheterization/

4. Urinary bladder, neurogenic/

5. Urinary bladder, overactive/

6. Urination disorders/

7. Toilet training/

8. Incontinence pads/

9. Dysuria/ or nocturia/

10. Toilet training/

11. Incontinence pads/

12. Pelvic floor/

13. toilet$.tw.

14. (incontinen$ or continen$).tw.

15. urodynamic$.tw.

16. ((bladder or detrusor or vesic$) adj5 (instability or stab$ or unstable or irritab$ or hyperreflexia or dys?ynerg$ or dyskinesia or overactive$)).tw.

17. (void$ adj5 (prompt$ or diar$)).tw.

18. (urin$ adj2 leak$).tw.

19. dribbl$.tw.

20. diaper$.tw.

21. (bladder$ adj2 (neuropath$ or neurogen$ or neurolog$)).tw.

22. bodyworn$.tw.

23. underpad$.tw.

24. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23

25. ((pelvic or habit or bladder or toilet or sensory) adj5 (train$ or re?train$ or re?educat$ or drill)).tw.

26. (timed void$ or prompted void$).tw.

27. 25 or 26

28. exp behavior therapy/

29. (behav$ adj25 (therap$ or intervention$ or train$ or re?train$ or modif$)).tw.

30. exp cognitive therapy/

31. (cognit$ adj25 (therap$ or intervention$ or train$ or re?train$)).tw.

32.Combined Modality Therapy/

33. (skill$ adj5 (train$ or re?train$)).tw.

*34. *Health promotion/*

35. Health Education/ or Patient Education as Topic/

*36. exp *Exercise/*

37. Motor skills/

38. Group processes/

39. Psychotherapy, group/

40. Social support/

41. ((group or social) adj5 support).tw.

42. Self care/

43. Cues/

44. Reminder Systems/

45. Tape recording/

46. exp motivation/

47. Feedback/

48. (monitor$ or feedback or goal$).tw.

49. 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48

50. 27 and 24

51. 49 and 24

52. 27 and 49

53. 52 or 50 or 51

54.Randomized Controlled Trials/

55. random allocation/

56. Controlled Clinical Trials/

57. control groups/

58. clinical trials/ or clinical trials, phase i/ or clinical trials, phase ii/ or clinical trials, phase iii/ or clinical trials, phase iv/

59. Clinical Trials Data Monitoring Committees/

60. double-blind method/

61. single-blind method/

62. Placebos/

63. placebo effect/

64. cross-over studies/

65. Multicenter Studies/

66. Therapies, Investigational/

67. Drug Evaluation/

68. Research Design/

69. Program Evaluation/

70. evaluation studies/

71. randomized controlled trial.pt.

72. controlled clinical trial.pt.

73. clinical trial.pt.

74. multicenter study.pt.

75. evaluation studies.pt.

76. meta analysis.pt.

77. meta-analysis/

78. random$.tw.

79. (controlled adj5 (trial$ or stud$)).tw.

80. (clinical$ adj5 trial$).tw.

81. ((control or treatment or experiment$ or intervention) adj5 (group$ or subject$ or patient$)).tw.

82. (surgical adj5 group$).tw.

83. (quasi-random$ or quasi random$ or pseudo-random$ or pseudo random$).tw.

84. ((multicenter of multicentre or therapeutic) adj5 (trial$ or stud$)).tw.

85. ((control or experiment$ or conservative) adj5 (treatment or therapy or procedure or manage$)).tw.

86. ((singl$ or doubl$ or tripl$ or trebl$) adj5 (blind$ or mask$)).tw.

87. (coin adj5 (flip or flipped or toss$)).tw.

88. latin square.tw.

89. versus.tw.

90. (cross-over or cross over or crossover).tw.

91. placebo$.tw.

92. sham.tw.

93. (assign$ or alternate or allocat$ or counterbalance$ or multiple baseline).tw.

94. controls.tw.

95. (treatment$ adj6 order).tw.

96.(meta-analy$ or metaanaly$ or meta analy$ or systematic review or systematic overview).tw.

97. or/54-96

98. 53 and 97

99. exp epidemiologic studies/

100. Intervention studies/ or Feasibility studies/ or Pilot projects/

101. exp Controlled Clinical Trial/

102. Nursing evaluation research/

103. Evaluation studies/ or multicenter study/

104. Program development/

105. behavioral research/ or empirical research/

106. (determinant$ or factor$ or barrier$ or enabler$ or facilitator$ or predictor$ or characteristic$).tw.

107. Guideline adherence/ or exp 'outcome and process assessment (health care'/ or exp program evaluation/ or Guidelines as topic/ or Clinical Protocols/

108. Health plan implementation/

109. Organizational innovation/

110. Diffusion of innovation/

111. Patient compliance/

112. Patient satisfaction/

113. exp health behavior/

114. exp consumer satisfaction/

115. exp patient acceptance of health care/

116. Information dissemination/

117. 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116

118. 53 and 117

119. exp Pregnancy/

120. 98 or 118

121. 120 not 119

122. Child/ or Adolescent/

123. Adult/

124. 122 not 123

125. 121 not 124

126. limit 125 to english language

*127. exp *Prostatectomy/*

128. 126 not 127

Appendix 2: Studies excluded from the review

Study	**Reason for exclusion**
Basu 2010	Includes treatment of prolapse as well as stress urinary incontinence
Diokno and Yuhico 1995	Only provides data relating to frequencies of choice, no data relating to barriers and enablers of choice.
Leonard 2009	Not possible to separate patients with urinary incontinence from those with pelvic floor dysfunction
Rosqvist 2008	No data provided on barriers and enablers
St John 2006	Not related to behavioural treatment.
Simons 2005	Collects data to test reliability of different response formats, no data relating to barriers and enablers of choice.
Storey 2009	Not possible to separate patients with urinary incontinence from those

	with pelvic organ prolapse		
Levy-Storms 2007			

Table 1: Description of studies of client experience

Study	Client	Method	Focus
Kincade et al. 1999 USA	Women, UI (n=10)	Interviews	Combined intervention
Johnson et al. 2001 USA	Frail older adults, UI (n=79)	Postal survey	UI treatment
Milne & Moore 2006 Canada	Individuals, UI (n=38)	Interviews + focus groups	Self-care strategies
Hay-Smith et al. 2007 New Zealand	Women, SUI (n=20)	Interviews	PFMT
O'Dell et al. 2008 USA	Older women, UI (n=25)	Interviews	Pelvic floor care
MacInnes 2008 UK	Women, SUI (n=12)	Telephone interviews	PFMT
Sarma 2009	Women, SUI (n=16)	Interviews	PFMT

UI = urinary incontinence, SUI = stress urinary incontinence, PFMT = pelvic floor muscle training

Table 2: Findings of client views studies: factors impacting on choice/uptake

BARRIERS	ENABLERS
CLIENT FACTORS	
High tolerance for pelvic floor dysfunction (PFD) symptoms (O'Dell et al. 2008)	*Interventions need to be suitable for the individual's needs (Johnson et al. 2001)*
	Dislike of embarrassment, public, personal, smell (Sarma et al. 2009)
	Dislike of inconvenience in everyday activities (Sarma et al. 2009)
	Increase in severity (Sarma et al. 2009)
	Hope (Sarma et al. 2009)
	Doing something for yourself/acknowledging the problem (Sarma et al. 2009)
UI management could disturb sleep (O'Dell et al. 2008)	
INTERVENTION FACTORS	
PV is viewed as difficult, results in dependence, and embarrassing (Johnson et al. 2001)	
Resistance to the idea of a pelvic examination (O'Dell et al. 2008, Johnson et al. 2001)	
Older adults aim was for containment of incontinence, with preference for independence, and no further testing or intervention (O'Dell et al. 2008)	*Older adults' main criteria were that the intervention should be easy and not foster dependence, and be natural, comfortable and non-invasive; other criteria were that the intervention should not be embarrassing, and be dry, odour free, simple and not bulky (Johnson et al. 2001)*
	Anti-surgery sentiment (Sarma et al. 2009)
CONTEXT FACTORS	
Respondents perceived staff to be unable or unwilling to implement UI interventions (Johnson et al. 2001)	Close proximity and availability of a clean bathroom (PV) (O'Dell et al. 2008)
Being unable to use bathroom because of safety restrictions (O'Dell et al. 2008)	
Delays between asking for and receiving help	

(O'Dell et al. 2008)		
		Expense of sanitary pads, private physiotherapy (Sarma et al. 2009) *Fear of consequences (e.g. nursing home)(Sarma et al. 2009)*

Findings in italics are from studies where weaknesses in study design are likely to affect credibility.

Table 3 Findings of client views studies: factors impacting on participation/adherence

BARRIERS		ENABLERS
CLIENT FACTORS:		
BT	Increased fear of being wet, difficulty of fitting into daily life (Milne and Moore 2006)	Sense of mastery for some if successful (Milne and Moore 2006)
PFMT	Trying to develop routines, finding the time and remembering to do exercises (Hay-Smith et al. 2007) Competing interests (UI could have only minor psychosocial impact) (Milne and Moore 2006) Co-morbidities (Sarma et al. 2009) Confidence (Sarma et al. 2009)	Maintaining an exercise routine, adapting a number of daily routines and accommodating treatment to own life (Milne and Moore 2006) Mastery of exercises and regaining control were valued (Hay-Smith et al. 2007) Having realistic goals and expectations (Milne and Moore 2006) Adapting a number of daily routines and accommodating treatment to own life (Hay-Smith et al. 2007)
INTERVENTION FACTORS		
PMFT	Hard to understand how to do the exercises (Hay-Smith et al. 2007, Sarma et al. 2009), exercises viewed as boring, a chore, tedious etc. (Hay-Smith et al. 2007) Difficulty knowing whether exercises were done correctly (Milne and Moore	Regular follow up, professional involvement and feedback, awareness and affirmation of progress (Milne and Moore 2006) Confirmation by palpation seen as helpful by at least one woman (Hay-Smith et al. 2007) Preferences for exercise type (Hay-Smith et al.

	2006)	2007)
	Difficult to continue without noticeable benefit (Hay-Smith et al. 2007)	Exercise support groups (Sarma et al. 2009)
	Forgetting to do PFMT despite memory joggers (Sarma et al. 2009)	
	Lack of available time (Sarma et al. 2009)	
CONTEXT FACTORS		
PFMT	Some women felt they needed privacy which limited the times/places they could do exercises (Hay-Smith et al. 2007)	Some women felt they could do exercises anywhere (Hay-Smith et al. 2007)
	Cost of private physiotherapy (Milne and Moore 2006)	Role of incontinence specialist (Sarma et al. 2009)

Table 4 Findings of client views studies: factors impacting on withdrawal/drop-out

BARRIERS	ENABLERS
CLIENT FACTORS	
Negative experiences, attitudes or feelings toward PFMT (Kincade et al. 1999, MacInnes 2008)	
Other health problems (Kincade et al. 1999, MacInnes 2008)	
Forgotten appointments (MacInnes 2008)	
Unwilling to practice PFMT exercises: too many other demands, not enough energy (Kincade et al. 1999)	
INTERVENTION FACTORS	
Treatment not perceived to be appropriate or effective for UI status (Kincade et al. 1999)	
PFMT exercises are boring (Kincade et al. 1999)	
Unable to tell if effective without biofeedback (Kincade et al. 1999)	Biofeedback for PMFT perceived to be helpful (Kincade et al. 1999)
Preference for delivery mode e.g. group vs individual	

(Kincade et al. 1999)
CONTEXT FACTORS
Other social demands e.g. caring role, housing issues (MacInnes 2008)
Problems with billing (Kincade et al. 1999)
Problems with travel to the clinic for older people (Kincade et al. 1999)
Treatment inconvenience: clinic conflicts with work demands for younger people (Kincade et al. 1999), no evening clinic (MacInnes 2008)

Findings in italics are from studies where weaknesses in study design are likely to affect credibility.

Table 5 Description of studies of staff experience

Study	Staff group	Data collection method	Focus
Lekan-Rutledge et al. 1998	NA, LTC (n=141)	Questionnaire	PV
Remsburg et al. 1999	Nursing, LTC (n=88)	Questionnaire	PV
Johnson et al. 2001	Nursing, LTC (n=66)	Group interviews	Continence care
Mather & Bakas 2002	NA, LTC (n=31)	Focus groups	Continence care
Dingwall & McLafferty 2006	Nursing, acute (n=63)	Focus groups, interviews	Continence care
Resnick et al. 2006	Nursing, LTC (n=38)	Focus groups	Continence care

NA = nursing assistant, PV = prompted voiding, LTC = long term care

Table 6. Findings of staff views studies relating to client and intervention characteristics

BARRIERS	ENABLERS
CLIENT	
Acute care nurses can view UI as a factor of old age, with a focus on containment rather than continence promotion (Resnick et al. 2006, Dingwall and McLafferty 2006). Nurses think clients may accept or hide UI (Dingwall and McLafferty 2006) with treatment acceptance dependent on duration of UI, and past coping strategies (Dingwall and McLafferty 2006)	
Factors affecting whether continence promotion strategies were used by nurses included:	Focus on improving pain and function (Resnick et al. 2002)
Pain, functional ability (Resnick et al. 2006, (Dingwall and McLafferty 2006)	*Nurses' assessment of incontinence status and selection of appropriate residents for PV (i.e. those who are "able and willing" (key issue) (Lekan-Rutledge et al. 1998)*
Cognitive ability, client ability to communicate and retain information (Dingwall and McLafferty 2006) cooperation and motivation (Mather and Bakas 2002, Dingwall and McLafferty 2006)	Get to know residents' toileting schedule (Resnick et al. 2006)
Depression (Dingwall and McLafferty 2006)	
Psychosocial problems: laziness, denial of the problem, not wanting to ask to urinate, fear of falling, resident embarrassed to ask for help (Resnick et al. 2006)	
For some residents the intervention (PV) does not make a difference/no change in wetness noted (Remsburg et al. 1999)	
Nurses used criteria related to avoidance of infection and increase in self-esteem more than clients or family; and used criteria relating to comfort, non-invasiveness and effectiveness less than residents or family (Johnson et al. 2001)	
INTERVENTION	
Improved efficiency of pads may be a reason for not promoting continence: staff view patients as comfortable, dry, UI is not visible, odour is reduced	

(Dingwall and McLafferty 2006)	
Pads may be used alongside continence promotion, but that can make it harder to toilet (Dingwall and McLafferty 2006)	Get clothes that are easy to pull on/off (Resnick et al. 2002)
Staff views on interventions e.g. PFMT not viewed as a nursing role (Dingwall and McLafferty 2006), *PV viewed as too time-consuming (Remsburg et al. 1999)*	
Procedures may not be followed appropriately (Remsburg et al. 1999, Dingwall and McLafferty 2006)	
CONTEXT	
Clients with UI on admission or those transferred from another area with UI are less likely to be assessed with a view to promotion of continence (Dingwall and McLafferty 2006)	
Nurses' dissatisfaction with assessment procedures, particularly around tools used and with multidisciplinary involvement in assessment. Assessment viewed as nursing role rather than multidisciplinary, with lack of referral to specialists (Dingwall and McLafferty 2006)	
Inconsistency of approach, variations in staff supportiveness for programmes, staff disinterest (Lekan-Rutledge et al. 1998, Resnick et al. 2006, Dingwall and McLafferty 2006)	
Lack of staff education around: types of UI, approaches to continence promotion, and psychological and social impact of UI (Resnick et al. 2006, Dingwall and McLafferty 2006)	Education about the importance and benefit of treatment (Lekan-Rutledge et al. 1998, Resnick et al. 2006, Mather and Bakas 2002)
Lack of communication, cooperation, and teamwork (Mather and Bakas 2002, Resnick et al. 2006)	Improve teamwork (Mather and Bakas 2002), *staff communication and support (including monitoring) for PV (Lekan-Rutledge et al. 1998)*
Lack of staff, low staffing levels, and lack of qualified staff for workloads (Lekan-Rutledge et al. 1998, Mather and Bakas 2002, Dingwall and	Adequate staff to resident ratios (Mather and Bakas 2002, Resnick et al. 2006) *Consider alternative means of PV implementation*

McLafferty 2006) Conflicting demands/priorities of staff (Lekan-Rutledge et al. 1998, Resnick et al. 2006, Dingwall and McLafferty 2006)	*e.g. team, limit the number of residents on PV (Lekan-Rutledge et al. 1998)*
The amount of time it takes to use manual handling equipment in acute care (Dingwall and McLafferty 2006), staff can't transfer alone and can't get help in time (Resnick et al. 2006)	Establish buddy system (Resnick et al. 2006) Transform the environment to facilitate function (Resnick et al. 2006) Provide sufficient supplies e.g. commodes, appropriate toilets, toilet lifts, better toilets/commodes, better lifts to help transfers (Resnick et al. 2006)
Negative attitude about the effectiveness of treatments (Resnick et al. 2006)	Staff felt rewarded when approaches were successful (Dingwall and McLafferty 2006)
Scheduling conflict – patient at therapy or appointments (Resnick et al. 2006)	

Findings in italics are from studies where weaknesses in study design are likely to affect credibility.

Figure add: PRISMA Flow Diagram