Effectiveness of educational interventions to raise men's awareness of bladder and bowel health
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CRD summary
The authors concluded that the small amount of research available limited the recommendations that could be given and further research was needed in male-only populations. They also made some cautious recommendations for practice. Given the lack of research with awareness as an outcome measure, the small number and poor quality of available studies, the authors' caution is warranted.

Authors' objectives
To evaluate the effectiveness of educational interventions aimed at raising men's awareness of bladder and bowel health.

Searching
Ten electronic databases including MEDLINE, CINAHL and Cochrane Central Register of Controlled Trials (CENTRAL) were searched for articles in English that were published between 2000 and 2010. Seminal papers published prior to this date were also included. References of retrieved studies and eight relevant journals were handsearched for additional studies. Disease descriptors added to the search strategy were reported.

Study selection
Eligible studies had concurrent controls that evaluated intervention programmes which provided information about or aimed to raise awareness of bladder and bowel health in adult and adolescent males (aged 12 and above). Studies of family members, carers or health professionals associated with adult or adolescent males were also eligible for inclusion.

Most included studies evaluated the effectiveness of pelvic muscle exercises in men who had undergone prostatectomy for prostatic cancer. These studies compared pelvic muscle exercises to no intervention, lifestyle changes advice, pelvic muscle exercises with biofeedback or pelvic muscle exercises with electrical stimulation. Duration of intervention ranged from three sessions up to one year. Other studies evaluated the impact of counselling, urethral milking training and pelvic muscle exercises on post-micturition dribble, lifestyle and behavioural modification of lower urinary tract symptoms and the impact of guidelines on management of continence in a general practice.

Two reviewers independently selected the studies for review. Disagreements were resolved by discussion.

Assessment of study quality
Included studies were assessed using the Joanna Briggs Checklist for experimental and observational studies (eleven items which assessed randomisation, blinding, withdrawals, outcome measurement, comparability of groups and appropriateness of analysis) and the Joanna Briggs Checklist for cohort and case control studies (nine items which assessed representativeness of sample, minimising of bias in group allocation, identification and management of confounding factors, outcome assessment, follow-up, withdrawals and statistical analysis). Each item was graded yes, no or unclear.

It appeared that two reviewers independently assessed quality.

Data extraction
Data were extracted onto a Joanna Briggs Institute Extraction form. For dichotomous outcomes the number of events in each group was extracted and used to calculate risk ratios (RR) or odds ratios (ORs) with corresponding 95% confidence intervals (CI). For continuous data, mean differences with 95% CI were calculated using the independent t-test. The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Most of the results were reported in a narrative synthesis. Where data were sufficiently homogeneous to combine, pooled RRs were calculated with 95% confidence intervals using the Mantel-Haenszel method. Statistical heterogeneity was assessed using $X^2$ and $I^2$.

**Results of the review**

Fourteen studies were included for review (1,086 participants); 12 randomised controlled trials (RCTs; 1,020 participants) and two before and after studies (66 participants). Only two studies described the method of randomisation, no studies reported blinding and four had weaknesses in data reporting.

**Pelvic muscle exercises following prostatectomy:** A meta-analysis of two RCTs found that pelvic muscle exercises significantly reduced the number of incontinent participants at three (RR 0.35, 95% CI 0.25 to 0.49; $I^2=10.6\%$), six (RR 0.13; 95% CI 0.06 to 0.25; $I^2=0\%$) and twelve (RR 0.15; 95% CI 0.05 to 0.42; $I^2=0\%$) months post-intervention compared to participants not performing pelvic muscle exercises. Statistical heterogeneity was low or nonexistent.

One RCT (58 participant) and one before and after study (24 participant) reported significant improvements in continence with pelvic muscle exercises in men following prostatectomy. However, another RCT (24 participants) found no benefits of pelvic muscle exercises plus biofeedback compared to no pelvic muscle exercises. In five other RCTs, pelvic muscle exercises was compared to pelvic muscle exercises plus biofeedback, electrical stimulation, intensive physiotherapy or magnetic stimulation. These studies found that all treatment conditions significantly improved urinary incontinence, with no significant differences between treatments.

**Post-micturition dribble:** One RCT (44 patients) found that training in urethral milking or pelvic muscle exercises significantly reduced urine loss post micturition compared to counselling. One RCT (55 participants) found that pelvic muscle exercises training plus lifestyle advice significantly reduced post-micturition dribble compared to lifestyle advice only at three months (RR 0.14, 95% CI 0.04 to 0.56) but not at six months.

**Lower Urinary Tract Symptoms:** One RCT (140 patients) Lifestyle and behavioural education significantly reduced the number of treatment failures at three (RR 0.23, 95% CI 0.11 to 0.50), six (RR 0.31, 95% CI 0.18 to 0.52) and twelve (RR 0.38, 95% CI 0.24 to 0.58) months in men with lower urinary tract symptoms.

**Guidelines on management of incontinence:** One before and after trial (174 patients) offered best practice follow-up in a GP practice to men who identified themselves as incontinent. Uptake of advice was low (four patients) and nearly all (three or four) still reported having problems with incontinence after the intervention.

**Authors' conclusions**

Pelvic muscle exercises alone may have been effective to reduce urinary incontinence in men after prostatectomy and in men with post-micturition dribble. The limited amount of research available restricted the conclusions that could be drawn. Education may be effective in men with lower urinary tract symptoms. Further research in male-only populations was needed.

**CRD commentary**

The review addressed a clear question. Inclusion criteria were broad which resulted in clinical differences between studies. There were two studies on which to draw conclusions about the effectiveness on pelvic muscle exercises in men with urinary incontinence following prostatectomy, but too few studies to draw conclusions about other interventions in other populations. Whilst the objective of the study was to evaluate the effectiveness of interventions on raising awareness, none of the studies evaluated awareness per se, but rather measures of continence. The search was restricted to articles written in English and did not appear to include unpublished data so publication and language bias could not be ruled out. Appropriate steps were taken in the study selection and quality assessment stages to minimise the risk of reviewer error and bias. However, it was unclear whether the same steps were taken at the data extraction stages.

A quality assessment was performed and the quality of included studies was generally low, which may have affected the reliability of the results. The decision to combine most results in a narrative synthesis was appropriate given the clinical heterogeneity between studies. Where studies were combined in a meta-analysis, appropriate methods were used and statistical heterogeneity was assessed. Given the lack of research with awareness as an outcome measure, the small number of available studies for some interventions and the poor quality of available studies, the authors' caution...
was warranted.

**Implications of the review for practice and research**

**Practice:** The authors stated that pelvic muscle exercises alone (without additional interventions) were sufficient to reduce urinary incontinence in men after prostatectomy. Self-management may have been effective in men with lower urinary tract symptoms and pelvic muscle exercises may have been effective in men with post-micturition dribble.

**Research:** The authors stated that further research was needed into the effectiveness of pelvic muscle exercises in men with post-micturition dribble. Further research was needed into interventions aimed at raising awareness of bladder and bowel health in male-only populations.

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