

Promoting urinary continence in women after delivery: randomised controlled trial

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Abstract

Objectives To test the effectiveness of a physiotherapist delivered intervention designed to prevent urinary incontinence among women three months after giving birth.

Design Prospective randomised controlled trial with women randomised to receive the intervention (which entailed training in pelvic floor exercises and incorporated strategies to improve adherence) or usual postpartum care.

Setting Postpartum wards of three tertiary teaching hospitals in the Hunter region, New South Wales, Australia.

Participants Women who had forceps or ventouse deliveries or whose babies had a high birth weight (≥ 4000 g), or both—676 (348 in the intervention group and 328 in the usual care group) provided endpoint data at three months.

Main outcome measures Urinary incontinence at three months measured as a dichotomous variable. The severity of incontinence was also measured. Self report of the frequency of performance of pelvic floor exercises was recorded.

Results At three months after delivery, the prevalence of incontinence in the intervention group was 31.0% (108 women) and in the usual care group 38.4% (125 women); difference 7.4% (95% confidence interval 0.2% to 14.6%, $P=0.044$). At follow up significantly fewer women with incontinence were classified as severe in the intervention group (10.1%) *v* (17.0%), difference 7.0%, 1.6% to 11.8%). The proportions of women reporting doing pelvic floor exercises at adequate levels was 84% (80% to 88%) for the intervention group and 58% (52% to 63%) for the usual care group ($P=0.001$).

Conclusions The intervention promoting urinary continence reduced the prevalence of urinary incontinence after giving birth, particularly its severity, and promoted the performance of pelvic floor exercises at adequate levels; both continence and adherence to the programme were measured at three months after delivery in women who had forceps or ventouse deliveries or babies weighing 4000 g or more.

Introduction

Urinary incontinence is physically debilitating and socially incapacitating, with loss of self confidence, feel-

ings of helplessness, depression, and anxiety all related to its occurrence.^{1 2} The prevalence among women increases during young adult life: a recent study of over 40 000 women in the community estimated a prevalence of 13% in women aged 18-22, about 35% in women aged 40-74.³

A recent report estimated that 1 835 628 women in the community older than 18 had urinary incontinence in 1998, which incurred a total annual cost of A\$710.4m (£257.7m, US\$367.4m, €422.5m).⁴

Although studies have proved that conservative treatment of urinary incontinence is effective, we could find no studies on preventing incontinence before its symptoms become evident.^{5 6} Epidemiological studies have shown an association between more severe forms of urinary incontinence and assisted vaginal deliveries or deliveries of infants with a high birth weight, which suggests the potential for an intervention promoting continence that is targeted at women who have just given birth.^{7 8}

Our study aimed to test the effectiveness of a programme for preventing urinary incontinence in women at three months after delivery.

Methods

We conducted a randomised controlled trial in the postpartum wards of three hospitals between August 1998 and February 2000 in the Hunter region, New South Wales, Australia. Women were eligible to join if they had had forceps or ventouse deliveries or their babies had had a birth weight of 4000 g or more.

Development of the intervention

The intervention was multifaceted and is shown in the figure. The intervention was underpinned by the framework of the health belief model (http://hsc.usf.edu/~kmbrown/Health_Belief_Model_Overview.htm), included strategies to improve compliance, and was developed by using a consensus of expert opinion and input from women in the target group.^{9 10}

Collection of baseline data in hospital

Eligible women were approached on the ward by one of three physiotherapists, usually within 48 hours of delivery. Consenting women completed a structured interview that elicited information on sociodemographics and experiences of urinary incontinence before the pregnancy and after delivery. After this, women were

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randomised to either a control group receiving usual care or the group receiving the intervention.

Intervention group

The women randomised to the intervention group were seen by the physiotherapist once during their stay in hospital and 306 women were seen again for a single visit with the same physiotherapist at eight weeks after delivery. The components of the eight week intervention are shown in the figure. The intervention in hospital required about 20 minutes of the physiotherapist's time, and the follow up visit was completed in about 30 minutes.

Usual care group

The usual care group received routine postpartum care, which did not include a visit from a physiotherapist. A brochure produced by the hospital was made available to all these women while in hospital. This outlined general postpartum and pelvic floor exercises, along with an invitation to join the routine physiotherapy postnatal classes held in the wards.

Follow up survey

All participants were interviewed by telephone three months after their recruitment into the study. The interviewer was blind to the group allocation of the women being interviewed.

Measures

Primary end point

The primary end point for the study was urinary incontinence at three months measured as a

dichotomous variable. In the follow up survey women were asked, "In the past month have you:

- leaked even small amounts of urine when you were coughing, sneezing, laughing, or lifting;
 - gone to the toilet urgently for fear you would leak;
 - leaked even small amounts if you had to wait to use the toilet;
 - leaked even small amounts on your way to the toilet;
- or
- leaked even small amounts if you hadn't gone to the toilet immediately you first felt the need."

They were classified as incontinent if they responded "occasionally," "often," or "always" to any of the items.

Secondary end points

We categorised severity of incontinence as slight, moderate, or severe.¹¹ Women were asked if they were performing pelvic floor exercises ("never," "less than once weekly," "about once a week" (categorised as inadequate levels), "a couple of times a week," "daily," or "more than once a day" (categorised as adequate levels).

Confounders

The following variables were considered as potential confounders and recorded accordingly: age; body mass index; urinary incontinence since the baby was born; perineal status (intact, graze, tear, tear with sutures, episiotomy, episiotomy and tear); joint hypermobility; abdominal striae; type of delivery (instruments used or not).

Data analysis

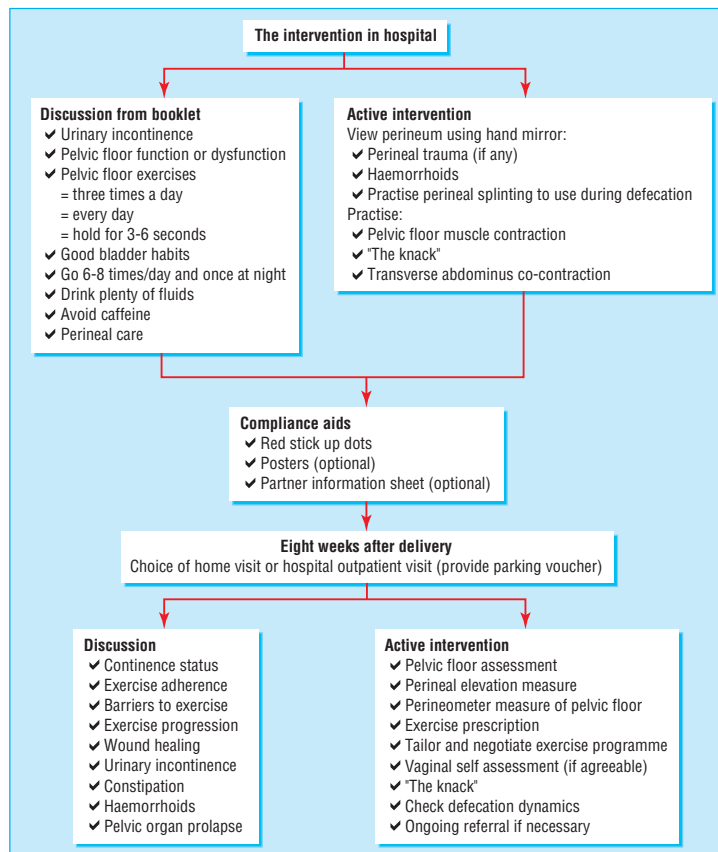
Logistic regression, using continence status at three months as the outcome measure and including the intervention group as a predictor variable, determined the effect of the intervention while controlling for any residual confounding from variables specified a priori. Mantel-Haenszel χ^2 statistics were used to test for a significantly increasing trend in the proportions of women exercising at adequate levels between the intervention and control groups.

Results

During data collection, 913 women were approached and 720 consented to take part. Age, number of pregnancies, marital status, and education of women in the control and intervention groups was similar. The table shows the factors identified a priori as potential confounders for the study in each of the groups. Compared with Australia's perinatal statistics, except for number of births and education, the sample characteristics are similar to the national norms. Compared with the national statistics, our sample had a higher proportion of primiparous women (54% v 40%) and a lower proportion of women with four or more births (5% v 10%).

Retention of women in the study

Between being seen in hospital and the follow up telephone call at three months, 22 women (6%) dropped out of each of the intervention group and the control group. Sixty four women in the intervention group did not attend the follow up visit at eight weeks. As we are analysing by intention to treat, these 64 women were included in the outcome analyses.



Components of intervention promoting continence

Continence status at three months

At three months post partum, the prevalence of incontinence in the intervention group was 31% (108) and in the usual care group 38% (125) (crude odds ratio 0.72 (95% confidence interval 0.52 to 0.99, $P=0.044$)). After residual confounding was controlled for, the odds ratio of incontinence for women in the intervention group compared with the control group was 0.65 (0.46 to 0.91, $P=0.01$). The experience of incontinence before the most recent pregnancy and continence status immediately after delivery also had an independent significant effect on continence status at three months (see bmj.com).

At three month follow up a significantly lower proportion of women who had mixed symptoms (symptoms of stress incontinence together with symptoms of urge incontinence) had severe symptoms in the intervention group than in the control group (10% (35 women) *v* 17% (55 women); a difference of 7% (2% to 12%) ($P=0.01$).

Adherence to pelvic floor exercises

In the usual care group 189 women (58%) and in the intervention group 292 women (84% of women reported performing pelvic floor exercises at adequate levels (difference 26%, 20% to 33%, $P < 0.001$).

Discussion

Potential limitations

Firstly, the results of the main effects of the intervention are of marginal statistical significance, with comparatively wide confidence intervals. When residual confounding was controlled for in the logistic regression, however, the strength of the association increased slightly. Secondly, we need to consider the external validity of the study, as the sample was drawn from only three hospitals. But these hospitals—urban public, urban private, and rural—served diverse population groups. Thirdly, the response rate indicated that only just over half of women who might have participated in the study actually did so (see bmj.com). The fact that women were missed is a reflection of current practice in many maternity hospitals in Australia. Women are encouraged to leave hospital within hours of delivery, with home support provided by visiting midwives; women with private health insurance usually choose to convalesce in private hospitals.

Women were not blinded to whether they were in the intervention or the control group. They were, however, explicitly told that the study was not measuring their personal individual exercise practice in any punitive fashion but rather whether the intervention helped them to remember to do their pelvic floor exercises. In spite of this, women might have felt socially pressured to admit to exercise levels above those that they performed. Another consideration is that levels of pelvic floor exercise were measured by using self report, which could lead to social desirability bias in the intervention group. There are, however, few, if any, alternatives for monitoring the performance of this type of exercise accurately.

Strengths of the study

The study also had several strengths. Firstly, we used a randomised controlled design. Secondly, the sample size was sufficient to detect a difference of around 8%

Clinical characteristics of women in the intervention and control group at baseline. Values are numbers (percentages)

	Intervention (n=348)	Usual care (n=328)
Incontinent before recent pregnancy:		
Yes	61 (18)	54 (17)
Incontinent immediately after giving birth:		
Yes	35 (10)	30 (9)
Don't know	23 (7)	13 (4)
Age over 36 years	31 (9)	29 (9)
Body mass index overweight or obese*	105 (30)	101 (32)
Perineal tear with sutures, episiotomy, or both	233 (66)	204 (63)
Joint hypermobility	53 (15)	36 (11)
Marked abdominal striae	75 (21)	73 (23)
Instrumental delivery	54 (44)	145 (45)

*Data are missing for 3 women in the intervention group and 8 women in the control group.

between groups as significant. Randomised controlled trials are highly idealised and do not mirror real clinical practice. As this study set out to examine how effectively the exercise programme was adhered to, the lack of adherence to exercise by the women in this study gives a realistic outcome that mirrors the potential for the performance of pelvic floor exercises among women who have recently given birth.

Implications

Many women experienced incontinence after delivery. The data from the usual care group show a prevalence of urinary incontinence of 38% among women who had forceps or ventouse deliveries or whose babies had a birth weight of 4000 g or more. It is likely that the intervention was successful because it was based on established theories of behaviour change, incorporated known principles of anatomy and physiology, and included input from consumers in its development. Since dropout rates have been shown to be high among postpartum women performing pelvic floor exercises, the use of behavioural principles seems to have encouraged adherence to the exercise programme and the performance of such exercises. That the programme was designed to exercise specific muscles and fit in with the normal daily routine of the women may have added to its acceptability. The effect of these components in women who have given birth

What is already known on this topic

Intensive pelvic floor exercise programmes can reduce urinary incontinence in selected groups of female patients

The effectiveness of interventions promoting continence in reducing urinary incontinence in the female population overall has not been investigated

Pelvic floor exercises are widely held to be an important component of continence promotion programmes

What this study adds

Continence promotion programmes delivered to a selected population are able to prevent urinary incontinence in that population

needs to be studied in the longer term, and follow up assessment is planned at 12 months post partum.

If this programme was disseminated among and taught to women by physiotherapists, this could result in the promotion of continence in the wider population. Other health professionals such as midwives and primary care physicians could be trained to carry out the different parts of the intervention—midwives immediately after the delivery and physicians or midwives at a postpartum visit.

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Assessing the outcome of compulsory psychiatric treatment in the community: epidemiological study in Western Australia

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Abstract

Objective To examine whether community treatment orders for psychiatric patients reduce subsequent use of health services in comparison with control patients not placed on an order.

Design Epidemiological study with a before and after, two stage design of matching and multivariate analysis, controlling for sociodemographic variables, clinical features, and psychiatric history.

Setting All community based and inpatient psychiatric services in Western Australia, covering a population of 1.7 million people.

Participants 228 subjects placed on a community treatment order, matched with an equal number of controls to give a total of 456 patients.

Main outcome measures Inpatient admissions, bed days, and outpatient contacts one year after subjects were placed on a community treatment order or the index date of matched controls.

Results Both subjects and their matched controls had reduced inpatient admissions and bed days in hospital. Subjects had significantly more outpatient contacts. Multivariate analysis indicated that being placed on a community treatment order was associated with increased outpatient contacts in the subsequent year compared with the control group. Otherwise, orders did not affect subsequent use of health services. Other factors associated with increased use of health services were age and inpatient admissions, bed days, and outpatient contacts before the order or index date. No covariates were shown to be associated with changes

in within pair differences in inpatient admissions or bed days.

Conclusions The introduction of compulsory treatment in the community does not lead to reduced use of health services.

Introduction

Enforcing psychiatric treatment in the community has become a feature in Australia, New Zealand, the United Kingdom, and the United States.¹⁻³ In the United States more than half the states have some form of compulsory community treatment,² and in Australasia similar provisions exist in Victoria, Western Australia, New South Wales, and New Zealand.³⁻⁵ Initiatives in the United Kingdom have included extended leave for patients leaving hospital and the supervision register.^{6,7} The recent white paper *Reforming the Mental Health Act* contains provisions for compulsory treatment in the community.⁸ Studies indicating limited but improved outcomes in terms of readmission to hospital, length of stay, and adherence to treatment have often not controlled for selection bias, variations in treatment, and differing criteria for compulsory treatment in the community.³

The new Mental Health Act of Western Australia, implemented in 1997, includes the provision of involuntary treatment in the community through the introduction of a community treatment order. The aim of our study was to compare the rate of inpatient admissions, bed days, and outpatient contacts of patients one year before and one year after placement on a community treatment order.