Original Article

Pelvic floor muscle training as a persistent nursing intervention: Effect on delivery outcome and pelvic floor myodynamia

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ARTICLE INFO

ABSTRACT

Purpose: To evaluate the effect of pelvic floor muscle training as a nursing intervention on delivery outcomes and postpartum pelvic floor myodynamia.

Methods: In total, 106 nulliparas were randomised into an intervention group and control group. All nulliparas participated in a pelvic floor training programme led by a midwife. A pelvic floor physical therapist measured the women's pelvic floor myodynamia and taught them how to correctly perform pelvic muscle contractions before the intervention. A registered nurse monitored the intervention group via twice-weekly telephone checkups. The control group did not receive individual direction.

Results: There were no differences in the rate of Caesarean section or elective Caesarean section between the two groups ($\chi^2 = 3.446$, $p = 0.076$ and $\chi^2 = 2.343$, $p = 0.185$, respectively). There was a difference in the timing of the second stage of labour between the two groups ($t = 2.101$, $p = 0.040$); no difference was observed in the timing of the other two stages of labour ($t = 1.771$, $p = 0.081$ and $t = 1.142$, $p = 0.263$, respectively). In addition, no differences were observed in the gestational weight gain ($t = 0.196$, $p = 0.845$), neonatal weight ($t = 0.113$, $p = 0.911$), rate of episiotomy ($\chi^2 = 0.932$, $p = 0.351$) or rate of perineal laceration ($\chi^2 = 0.022$, $p = 0.982$) between the two groups. The pelvic floor myodynamia of the intervention group had improved to a greater degree than that in the control group at 6 weeks and 3 months after delivery ($p < 0.005$).

Conclusion: Persistent nursing intervention for pregnant/postpartum women helped to shorten the second stage of labour and contributed to the recovery of postpartum pelvic floor myodynamia. The influence of this intervention on the delivery mode, and rates of

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episiotomy and perineal laceration remains unknown. Medical staff should strengthen health education programmes that involve pelvic floor functional rehabilitation.

1. Introduction

The effectiveness of pelvic floor muscle exercises (pelvic floor muscle training, PFMT) to prevent and treat pelvic floor dysfunction during pregnancy and/or the postpartum period has generally been recognised [1]. PFMT facilitates the rehabilitation of postpartum pelvic floor function and can be performed without restrictions of time, location, or position. However, because the movements involved in PFMT are monotonous and lack a fixed protocol, compliance in performing PFMT may be problematic. Therefore, researchers have not only studied the aetiology of and treatment methods for pelvic floor dysfunction, but have also started to focus on how to help women better grasp the essentials of PFMT, enhance enthusiasm to practice PFMT, and thus improve the effect of PFMT [2–5]. China is currently performing relatively little research in this area. In the present study, we established a PFMT health education curriculum in a hospital's "pregnant school", provided instruction in PFMT to women from early pregnancy, and followed up all women until 3 months postpartum. The aim of this study was to observe the effect of PFMT as a persistent nursing intervention on delivery outcomes and pelvic floor myodynamia.

2. Materials and methods

2.1. Patients

Pregnant women who underwent regular antenatal examination in the obstetric clinic of a top-three hospital in Guangzhou City, China from December 2010 to March 2011 were selected for participation in this study. The inclusion criteria were 16–32 weeks of gestation; normal cognitive function; informed consent; no history of childbirth or abortion; diagnosis of singleton pregnancy by B-ultrasound; no obvious risk factors according to prenatal and B-ultrasound examination findings; and no history of urinary incontinence, pelvic surgery, pelvic organ prolapse, or vaginal wall prolapse. In total, 106 patients were enrolled. The women were randomly divided into a test group ($n = 57$) and control group ($n = 60$). Four patients in the test group and three patients in the control group withdrew from the study because of the development of gestational diabetes, placenta previa, or other complications, and two patients in each group did not complete the study because of the inability to complete the postpartum referral. After exclusion of these patients, the test and control groups comprised 51 and 55 patients, respectively. There were no significant differences in the general features of the two groups before the nursing intervention (Table 1).

2.2. Methods

2.2.1. Intervention methods
Each subject participated in a PFMT course instructed by one full-time health education nurse. The course topics included the female pelvic anatomy, the function of the female pelvic floor muscles, causes of pelvic floor muscle dysfunction, and possible symptoms. Using a discussion teaching method, the nurse explained the influence of pregnancy and delivery on the function of the pelvic floor muscles, the benefits of controlling the maternal and foetal body weight, and how to perform PFMT. We ensured that all participants correctly understood the PFMT methods (the women were given guidance in the correct muscle contraction method by a pelvic floor physiotherapist while performing pelvic floor muscle strength measurements during the first antenatal examination), and all participants were exposed to the same family PFMT programme.

The programme details were as follows. Training could be conducted at any time of day in a standing, supine, or sitting position. The women were asked to empty the bladder and then contract the anal and vaginal muscles for no less than 3 s. The muscles were then relaxed. This contraction–relaxation

Table 1 – Comparison of general features between the two groups.

Parameter	Test group ($n = 51$)	Control group ($n = 56$)	t or Z	p
Age in yr	27.31 ± 2.94	26.58 ± 3.04	1.259[a]	0.211
Pregestation BMI in kg/m^2	22.51 ± 3.72	21.97 ± 2.36	0.899[a]	0.371
Abortion	0.51 ± 0.78	0.33 ± 0.61	1.343[a]	0.182
Gestation in wk	24.08 ± 4.22	23.75 ± 4.48	0.393[a]	0.695
Pelvic floor muscle myodynamia scores				
Deep I	3.39 ± 1.18	3.41 ± 1.13	0.134[b]	0.894
Shallow I	3.25 ± 1.20	3.27 ± 1.22	0.238[b]	0.812
Deep II	3.49 ± 1.24	3.41 ± 1.29	0.120[b]	0.904
Shallow II	3.47 ± 1.25	3.38 ± 1.31	0.333[b]	0.739

"Deep I" indicates the pelvic floor muscle contraction of deep type I muscle fibres; "Shallow I" indicates the pelvic floor muscle contraction of shallow type I muscle fibres; "Deep II" indicates the pelvic floor muscle contraction of deep type II muscle fibres; "Shallow II" indicates the pelvic floor muscle contraction of shallow type II muscle fibres.

BMI = body mass index.
[a] t value.
[b] Z value.