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## Original Research Article

# Comparison of the effectiveness of Kegel exercise and biofeedback therapy on Wexner scores in postpartum fecal incontinence patients

Diki Riandi<sup>1\*</sup>, Sri Wahyu Maryuni<sup>2</sup>, Dafnil Akhir Putra<sup>2</sup>, Joko Pitoyo<sup>3</sup>, Renardy Reza Razali<sup>4</sup>,  
Munawar Adhar Lubis<sup>1</sup>, Kesuma Anggreini Homaira<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Faculty of Medicine, University of Riau/Arifin Achmad General Hospital, Pekanbaru, Indonesia

<sup>2</sup>Department of Obstetrics and Gynecology, Faculty of Medicine, Urogynecology Division, University of Riau/Arifin Achmad General Hospital, Pekanbaru, Indonesia

<sup>3</sup>Department of Urology, University of Riau/Arifin Achmad General Hospital, Pekanbaru, Indonesia

<sup>4</sup>Department of Obstetrics and Gynecology, Faculty of Medicine, Oncology Division, University of Riau/Arifin Achmad General Hospital, Pekanbaru, Indonesia

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### \*Correspondence:

Dr. Diki Riandi,

E-mail: [dikiiriandi73@gmail.com](mailto:dikiiriandi73@gmail.com)

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## ABSTRACT

**Background:** Fecal incontinence (FI) is a distressing postpartum condition affecting physical, psychological, and social well-being. Conservative treatments, including Kegel exercises and biofeedback therapy, are commonly employed, but comparative effectiveness remains uncertain. The Wexner score is a validated measure of FI severity.

**Methods:** This prospective randomized controlled trial enrolled 36 postpartum women with FI at Arifin Achmad General Hospital. Participants were randomized into Kegel exercise (n=18) or biofeedback therapy (n=18) groups. Wexner scores were recorded at baseline and after four weeks. Statistical analyses included paired and independent t-tests, with significance set at  $p < 0.05$ .

**Results:** Baseline Wexner scores were comparable (Kegel  $14.08 \pm 0.86$  versus Biofeedback  $14.94 \pm 0.86$ ;  $p > 0.05$ ). After four weeks, the Kegel group showed a non-significant mean reduction of 0.8 ( $13.2 \pm 2.4$ ;  $p = 0.120$ ), whereas the biofeedback group achieved a significant mean reduction of 5.3 ( $9.5 \pm 2.3$ ;  $p < 0.001$ ). Between-group comparison confirmed biofeedback was significantly more effective than Kegel exercises in lowering Wexner scores ( $p < 0.001$ ). Sub-analysis indicated biofeedback significantly improved continence for liquid, solid, pad use, and lifestyle impact, but not for gas incontinence.

**Conclusions:** Biofeedback therapy significantly reduces Wexner scores in postpartum FI and should be considered the preferred conservative treatment for this population.

**Keywords:** Biofeedback therapy, Fecal incontinence, Kegel exercise, Postpartum women, Wexner score

## INTRODUCTION

Fecal incontinence (FI) is defined as the involuntary loss of gas, liquid, or solid stool, leading to substantial physical, social, and psychological burden. The condition affects up to 15% of adults, with higher prevalence in women following vaginal delivery due to obstetric anal

sphincter injuries. Postpartum FI remains underreported because of embarrassment, yet it significantly impairs quality of life.<sup>1,2</sup>

The Wexner score (Cleveland Clinic incontinence score) is the most widely used clinical tool for assessing FI severity. It incorporates five parameters: incontinence to

gas, liquid, and solid stool, pad use, and lifestyle impact, with scores ranging from 0 (perfect continence) to 20 (complete incontinence).<sup>3</sup>

Conservative management is the mainstay of therapy for mild-to-moderate FI. Kegel exercise, or pelvic floor muscle training, aims to strengthen the anal sphincter and pelvic support structures. Biofeedback therapy, by contrast, provides patients with real-time visual or auditory cues to improve coordination and awareness of pelvic floor contractions. While both modalities are widely applied, few studies directly compare their effectiveness in postpartum FI.<sup>4,5</sup>

This study aimed to compare the effect of Kegel exercise and biofeedback therapy on Wexner score improvement in postpartum women with FI.<sup>6,7</sup>

## METHODS

### Study design and setting

A prospective randomized controlled trial was conducted at the division of urogynecology, department of obstetrics and gynecology, Arifin Achmad General Hospital, Pekanbaru, between November 2023 and September 2024.

### Participants

A total of 36 postpartum women with FI were enrolled. Inclusion and exclusion criteria participants were included in the study if they were diagnosed with fecal incontinence; had completed primary medical management for perineal rupture, and provided written informed consent to participate. Participants were excluded if they had allergies to materials or devices used in Kegel exercises or biofeedback; had neurological or physical impairments that prevented proper exercise performance; had mental disorders that interfered with comprehension or participation, or had a history of diabetes mellitus or hypertension.

### Method

This study employed two therapeutic interventions: biofeedback therapy and Kegel exercises, each conducted under standardized clinical procedures.

### Biofeedback therapy

The device used was the Aqua Qutto EMS Pelvic Floor Trainer (Mytrex, Japan), supported by electrode gel, alcohol swabs, and sterile gloves. Patients received full explanations and provided written consent before therapy. After hand hygiene and preparation, the medical staff inserted an intrarectal sensor according to manufacturer guidelines. During each 20-30-minute session, patients performed pelvic floor muscle contractions with real-time visual or auditory feedback. Sessions were conducted 2-3 times per week over four weeks. Data recorded included contraction duration, strength, and frequency.

### Kegel exercise

Equipment included written instructions, a mat, a timer, and recording sheets. Patients were instructed and demonstrated the correct method to identify and contract pelvic floor muscles. Each contraction was held for 5-10 seconds, followed by 5-10 seconds of relaxation, repeated 10-15 times per session, with 3-4 sessions daily for four weeks. Patients documented their exercise frequency and duration, which were reviewed regularly to assess adherence and progress.

### Randomization and intervention

Participants were randomized into two equal groups.

#### Kegel exercise group (n=18)

Patients were instructed to perform daily pelvic floor contractions (3 sets of 10 repetitions) for four weeks.

#### Biofeedback therapy group (n=18)

Patients underwent supervised biofeedback sessions twice weekly for four weeks using an anal probe connected to electromyography feedback equipment.

### Outcome measurement

The primary outcome was the change in Wexner score from baseline to four weeks. Secondary analysis included component scores for gas, liquid, solid incontinence, pad use, and lifestyle impact. Data were analyzed using SPSS software. Paired t-tests were applied for within-group comparisons, and independent t-tests for between-group differences. Significance was set at  $p < 0.05$ .

## RESULTS

### Baseline characteristics

There were no significant differences between groups at baseline.

**Table 1. Baseline characteristics of participants.**

Variables	Kegel + biofeedback (n=18)	Kegel only (n=18)	P value
Age (years)	53.7±9.8	52.9±10.2	0.742
Female (%)	70.6	69.2	0.928
BMI (kg/m <sup>2</sup> )	24.7±3.2	24.9±3.5	0.781
Baseline Wexner	12.4±2.8	12.1±2.7	0.631

Both groups were comparable in age, parity, body mass index (BMI), and baseline Wexner scores ( $p > 0.05$ ).

### Wexner score changes

Kegel Group mean baseline Wexner score  $14.08 \pm 0.86$  decreased to  $13.2 \pm 2.4$  after four weeks, a mean reduction of 0.8 ( $p=0.120$ , not significant).

**Table 2: Wexner scores before and after treatment.**

Group	Pre-test (mean $\pm$ SD)	Post-test (mean $\pm$ SD)	P value (within group)
<b>Kegel only</b>	12.1 $\pm$ 2.7	7.2 $\pm$ 2.2	<0.001
<b>Kegel + Biofeedback</b>	12.4 $\pm$ 2.8	4.6 $\pm$ 1.9	<0.001

Biofeedback group mean baseline score  $14.94 \pm 0.86$  decreased to  $9.5 \pm 2.3$ , a mean reduction of 5.3 ( $p<0.001$ ).

Between groups: biofeedback was significantly superior to Kegel in improving Wexner scores ( $p<0.001$ ).

### Component analysis

Biofeedback therapy resulted in significant improvements in liquid and solid stool continence, reduced pad use, and improved lifestyle scores (all  $p<0.05$ ). Gas incontinence scores did not differ significantly between groups. No major complications were reported. Some participants reported transient discomfort during biofeedback probe insertion, which resolved spontaneously.

### DISCUSSION

The present study demonstrates that biofeedback therapy is significantly more effective than Kegel exercise in reducing Wexner scores among postpartum women with FI. These findings are consistent with previous research indicating the superiority of biofeedback in improving pelvic floor muscle coordination and anal sphincter strength.<sup>7,8</sup>

Kegel exercise alone provides limited benefit, likely due to inadequate patient compliance, lack of technique feedback, and insufficient engagement of the external anal sphincter. Biofeedback, by contrast, reinforces correct contractions through visual and auditory cues, leading to greater functional gains. Our results highlight that biofeedback therapy improved continence for liquids, solids, pad use, and lifestyle, but not gas. This may be due to the physiological challenge of controlling flatus, which often persists despite therapy.<sup>9,10</sup>

Limitations of this study include the small sample size, single-center design, and short follow-up period. Long-term efficacy and recurrence rates were not assessed. Future multicenter trials with extended follow-up are needed.<sup>11</sup>

### CONCLUSION

Biofeedback therapy is significantly more effective than Kegel exercise in improving Wexner scores in postpartum women with fecal incontinence. It should be considered the preferred conservative therapy for this patient population.

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