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Original Article

Effectiveness of pelvic myofascial trigger point release for the therapy of sexual dysfunction in women after vaginal delivery: A prospective pilot study

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ABSTRACT

Objectives: The objective of study was to compare the effects of pelvic myofascial trigger point release and structured pelvic floor muscle training (PFMT) in patients with female sexual dysfunction after vaginal delivery.

Patients and methods: In this prospective randomized controlled trial, 126 patients with female sexual dysfunction after vaginal delivery were included between October 2022 and December 2023. The participants were randomly allocated to receive either trigger point release and structured PFMT (63 females; mean age, 30.4±2.8 years; range, 25 to 35 years) or only structured PFMT (63 females; mean age, 31.4±3.1 years; range, 24 to 35 years). The primary outcome was Female Sexual Function Index (FSFI) score of the participants. Secondary outcomes were Glazer pelvic floor electromyography and the Visual Analog Scale score of urogenital pain map, pelvic floor muscle pain map, and bladder pain map.

Results: The observation group manifested a significant improvement in the FSFI total score and each individual subitem compared to the control group ($p<0.01$). In addition, in Glazer pelvic floor electromyography, the observation group exhibited a significant decrease in pre-resting value and post-resting value compared to the control group after treatment ($p<0.01$). Additionally, there was significant decrease in Visual Analog Scale scores in the observation group compared to the control group ($p<0.01$). Moreover, after therapy, the observation group demonstrated a significantly greater enhancement in pelvic floor muscle strength than the control group ($p<0.05$).

Conclusion: Pelvic myofascial trigger point release combined with structured PFMT is an efficient treatment for female sexual dysfunction after vaginal delivery compared to structured PFMT alone.

Keywords: Myofascial trigger point, pelvic floor, physical therapy, sexual dysfunction.

Female sexual dysfunction (FSD) is a condition encompassing difficulties related to sexual arousal, sexual pain, sexual desire, or orgasm.[1] This leads to an inability to generate adequate sexual physiological responses and derive pleasure from satisfactory sexual intercourse. The dynamic changes in women's physiology, psychology, and social roles during pregnancy and the postpartum period significantly impact their postpartum sexual function.[2]

Female sexual dysfunction refers to the disorder and pain experienced during one or multiple stages of the sexual response cycle, resulting from psychological or organic factors.[3] During pregnancy, as the uterus grows larger, the angle between the cervix and pelvic floor gradually increases, which leads to increased direct pressure from the uterus on pelvic floor tissue. Vaginal delivery involves lifting and lowering of the vagina, which expands it mechanically, compressing pelvic floor muscles,

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and causing high tension that can result in injuries to vaginal nerves, pelvic floor muscles, and fascia.[4] Additionally, depressive psychological states can diminish female sexual pleasure or even lead to refusal of sexual intercourse. Moreover, fluctuations in estrogen stimulation and progesterone secretion among pregnant women affect pelvic floor tissue, thereby influencing female sexual function.[5] After comparing the pelvic floor electromyography (EMG) results of FSD and non-FSD patients, Wang et al.[6] discovered that the pelvic floor muscles of FSD patients were more susceptible to fatigue and exhibited poor coordination. Recent research revealed that myofascial trigger point release can reduce muscle fatigue and alleviate pain symptoms.[7]

Previous studies have reported that 66.4% of women have engaged in sexual activity within six months from pregnancy to postpartum period, with 49.3% experiencing postpartum FSD.[8] Furthermore, research indicates a higher incidence of postpartum sexual dysfunction compared to pre-pregnancy levels, with a common occurrence within the first six months after childbirth.[9,10] Female sexual dysfunction not only inflicts dual suffering on the mother's physical and psychological well-being but also diminishes the quality of her postpartum sexual life while potentially impacting couple harmony.[11] It may even contribute to social issues, such as an elevated divorce rate. Consequently, the management of FSD has garnered escalating attention from both maternal individuals and obstetric healthcare professionals.

Various treatments had been employed in the past for FSD following vaginal birth. However, there is only low-quality evidence that structured pelvic floor muscle training (PFMT) leads to improved sexual function. Ament and Verkerke[12] believe that physical exercise will eventually lead to muscle fatigue and mind exhaustion. Clinical observations have revealed that FSD patients are prone to pelvic floor muscle fatigue and uncoordinated movements. Furthermore, recent studies indicated that myofascial trigger point release can decrease muscle fatigue and relieve pain symptoms.[7] This study aimed to assess the effectiveness of trigger point release plus structured PFMT versus structured PFMT alone in patients with FSD.

PATIENTS AND METHODS

This single-blind, prospective, randomized clinical trial was conducted at the outpatient departments of the Baoshan Hospital, Shanghai University of Traditional Chinese Medicine between October 2022 and December 2023. Before treatment, demographic characteristics of the participants were collected. A total of 132 participants diagnosed with postpartum FSD, who sought treatment at our hospital's postpartum rehabilitation clinic and rehabilitation medicine clinic, were enrolled as participants. The participants were randomly allocated into two groups, with 66 patients in the control group and 66 patients in the observation group. There were no statistically significant differences observed in the baseline characteristics between the two groups ($p>0.05$). During treatment, three participants withdrew from the control group due to personal reasons. Three participants in the observation group were excluded from analysis due to incomplete data. One hundred thirty-two patients were randomized, and 126 were analyzed. Hence, final analyses included 63 female patients (mean age, 30.4±2.8 years; range, 25 to 35 years) in the observational group and 63 female patients (mean age, 31.4±3.1 years; range, 24 to 35 years) in the control group. The inclusion criteria were as follows: women aged 22 to 35 years, who had given birth between 42 days and six months after vaginal delivery, with the cessation of postpartum hemorrhagic lochia; women who had undergone a smooth birthing process (without the use of assisted delivery devices); postpartum women had a documented sexual history and who fulfilled the diagnostic criteria for FSD as per the Consensus-Based Classification of Female Sexual Dysfunction.[9,13,14] The total Visual Analog Scale (VAS) score was the sum of the VAS value of 17 trigger points on the three-region pain map.[15] Participants with a VAS total score >1 were enrolled. Additionally, postpartum women who received PFMT for at least one month and showed no significant improvement, participants who agreed to refrain from receiving any other treatments during the study period, and participants who possessed normal cognitive ability and clear consciousness were included in the study. Exclusion criteria were as follows: pregnant individuals; individuals with a history of pelvic organ system tumors or other organic lesions; individuals with fluid in the pelvic cavity based on B-mode ultrasound examination; individuals with a history of pelvic floor suspension, hysterectomy, or pelvic floor bleeding; individuals with pacemaker installation or pelvic metal implants; individuals with a history of neurological or mental system disorders;

individuals experiencing sexual dysfunction caused by gynecological inflammation, gynecological tumors, endometriosis, chronic pelvic lesions, or premature ovarian failure. Written informed consent was obtained from all participants. The study protocol was approved by the ethical committee of Shanghai Baoshan Hospital of Integrated Traditional Chinese and Western Medicine (Date: 06.01.2022, No. 202125) on January 6, 2022, and the study was registered in the Chinese Clinical Trial Registry system (Registration No. ChiCTR2200063612) on September 13, 2022. The Consolidated standards of Reporting Trials (CONSORT) was the guideline for this trial. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Grouping and Randomization scheme

Figure 1 illustrates the schedule of recruitment, allocation, follow-up, and analyses for the trial. All enrolled participants were randomly allocated to two groups, namely the observation group and the control group. An independent statistician generated the block randomization scheme in a blinded manner. Another independent researcher who was not involved in recruitment, intervention, or evaluation managed the accomplishment of the tables. The clinical research coordinator sent the allocation information to the researcher who conducted the random assignment. Participants were blinded to their treatment group. Blinding was maintained until the data were locked. Unblinding could only be done if there was a threat to the rights and safety of the participants, including the event of severe adverse reactions.

Intervention

The control group underwent PFMT, also known as Kegel exercises, a set of conscious pelvic floor muscle contractions. In current clinical practice, PFMT includes many therapeutic techniques (called structured PFMT), including pelvic voluntary muscle contractions guided by biofeedback therapy.[16] The biofeedback (model: P2; Shenzhen Li bang Precision Instrument Co., Ltd., Shenzhen, China) was utilized in this study. The participants were asked to empty their bladder

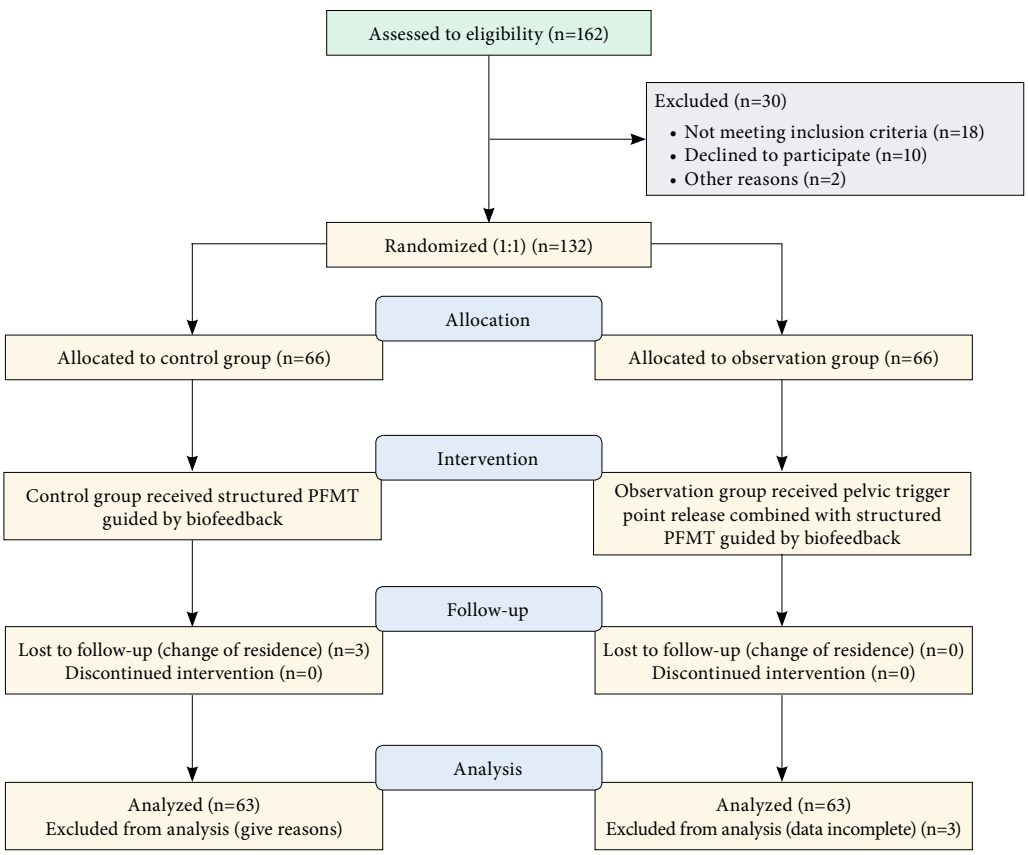

Figure 1. Flowchart of the study.

PFMT: Pelvic floor muscle training.

and assume a supine position while relaxing the entire body with the legs open. The probe of the biofeedback therapeutic instrument was inserted into the vagina. Participants received 30 min of structured PFMT guided by biofeedback for every treatment. This treatment regimen was conducted twice weekly for a period of four weeks.

The observation group underwent pelvic myofascial trigger point release in addition to PFMT. The participants were informed to empty their bladder and assume the lithotomy or supine position. Pelvic therapists utilized disposable sterile gloves, and the index finger palpated the vagina to identify trigger points with a VAS score ≥1 in the three-region pain map, following a counterclockwise direction starting at the 10 o'clock position. The therapists applied pressure within the participant's tolerance range (finger pressure standardized at 1 kg/cm^2), and continuous pressed and circular massage were performed on each trigger point for four to five times until pain relief was achieved. Each session lasted for 15 min, twice a week, over a continuous treatment period of four weeks. After pelvic myofascial trigger point release, participants also received 30 min of structured PFMT guided by biofeedback for every treatment.

Outcome measurements

Assessment was conducted encompassing the following aspects before treatment and after four weeks of intervention.

Female Sexual Function Index score

The Female Sexual Function Index (FSFI) consisted of six subitems assessing sexual interest questions 1 and 2), sexual arousal (questions 3-6), vaginal lubrication (questions 7-10), orgasmic function (questions 11-13), sexual satisfaction (questions 14-16), and sexual discomfort or pain during intercourse (questions 17-19).[17] The lowest possible score in this study was two points, while the highest attainable score reached up to 36 points. The FSFI subscale scores below specific scores indicated difficulties in respective domains such as low sexual desire (<3.6 for single item score), impaired vaginal lubrication (<3.9 for single item score), orgasmic disorder (<4.0 for single item score), or sexual pain (<4.4 for single item score). Total score was 36 points, with higher scores revealing better sexual function. Female sexual dysfunction was defined as a FSFI total score <26.55.[17]

Glazer pelvic floor electromyography protocol

The Glazer pelvic floor EMG protocol involves surface EMG of pelvic floor muscles. The evaluation process consisted of five parts: pre-rest period, phasic contraction period, tonic contraction period, endurable contraction period, and post-rest period. The total score for pelvic floor muscle fibers was calculated by summing up the scores from these five parts. A score below 85 indicated pelvic floor muscle dysfunction. Increased muscle tension was considered when the pre-rest period voltage exceeded 4uv. We compared the individual values of five parts as well as the total scores of all five parts of the EMG.[18]

Pain map

Participants were instructed to empty their bladder prior to examination and assume the lithotomy position. Each participant was required to provide a comprehensive pain map, including urogenital pain map (comprising six detection points in the abdomen and vulva), pelvic floor muscle pain map (including 7 detection points in the anal tail suture, coccygeus muscle, iliococcygeus muscle, and obturator internus), as well as bladder pain map (consisting of four detection points from paraurethral region to the bladder neck on both sides). For the palpation point, three pieces of information were recorded: VAS score (using the Numerical Rating Scale with scores ranging from 0 for no pain to 10 for severe pain), number of painful points, and the sum of VAS scores. Palpation pressure ranged from finger pressure at approximately 0.4 to 0.5 kg/cm^2.[15]

Pelvic floor muscle strength

Pelvic floor muscle strength (PFMS) was evaluated by the modified Oxford grading scheme (MOS).[19] The MOS quantified pelvic floor muscle as follows: Level 0, no contraction; Level I, flicker; Level II, weak; Level III, moderate; Level IV, good; and Level V, strong

Sample size calculation

The enumeration data form the 1:1 parallel controlled trial was subjected to statistically analysis using two-sided superiority test with an alpha of 0.05 and power of 90%. The formula for the calculation was:

$$n = \frac{\left(z_{1-\alpha}+z_{1-\beta}\right)^2 \times \left(\sigma_1{}^2 + \sigma_2{}^2\right)}{\delta^2}$$

Assuming that the standard deviation of the difference in FSFI score pre-therapy and posttreatment in the control group was 0.19 points, and 2.27 points in the observation group, if the change in FSFI total score before and after intervention in the observation group was 1 point higher than that in the control group, it was considered to have clinical significance. The sample size estimation was as follows:[20]

$$n = \frac{(z_{1-\alpha}+z_{1-\beta})^2\times(\sigma_1{}^2+\sigma_2{}^2)}{\delta^2} = \frac{(1.96+1.28)^2\times(0.19^2+2.27^2)}{1^2}\approx 55$$

Hence, it was estimated that there would be a minimum of 55 participants in each group. The dropout rate was assumed to be 20%. Therefore, a minimum of 66 participants would be enrolled in each group, resulting in the requirement of 132 participants for this study.

Statistical analysis

Statistical analysis was conducted using IBM SPSS version 22.0 software (IBM Corp., Armonk, NY, USA). Among all the data, the nonnormally distributed data were the Glazer pelvic floor EMG protocol, as well as the pregnancy and delivery data in the clinical and demographic characteristics. Other data were normally distributed. For nonnormally distributed data, paired sample rank sum test was employed in within-group comparisons

TABLE 1
Comparison of characteristics of participants with FSD between the two groups

		Age (year)	Pregnancies (times)		Births (times)	
Groups	n	Mean±SD	Median	25th-75th percentile	Median	25th-75th percentile
Control	63	30.4±2.8	1	1-2	1	1-1
Observation	63	31.4±3.1	1	1-2	1	1-1

FSD: Female sexual dysfunction; SD: Standard deviation.

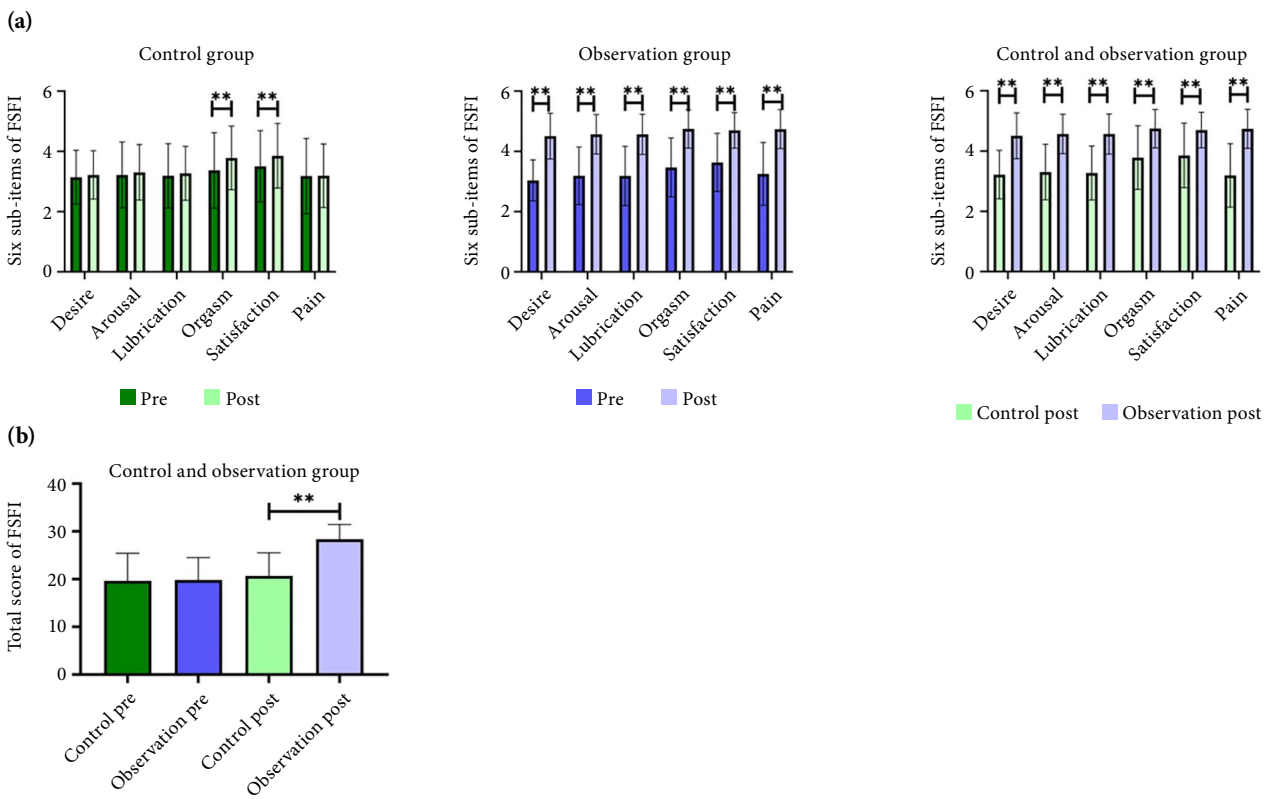

Figure 2. Comparison of the FSFI scores.

PFMT: Pelvic floor muscle training; Pre: Before treatment; Post: After treatment; Control group: PFMT only; Observation group: PFMT + trigger point release.

TABLE 2
Comparison of the FSFI scores between the two groups

Domain	Desire		Arousal		Lubrication		Orgasm		Satisfaction		Pain		Total score	
	Median	Min-Max	Median	Min-Max	Median	Min-Max	Median	Min-Max	Median	Min-Max	Median	Min-Max	Median	Min-Max
Questions	1.2		3,4,5,6		7,8,9,10		11,12,13		14,15,16		17,18,19			
Minimum score	1.2		0		0		0		0.8		0		2.0	
Maximum score	6.0		6.0		6.0		6.0		6.0		6.0		36.0	
Control group														
Preoperative	3	1.2-5.4	3.3	0-5.1	3.3	0-5.1	3.6	0-5.2	3.6	0.8-5.2	3.6	0-5.2	22.2	2-24.6
Postoperative	3	1.2-5.4	3.3	0.3-5.1	3.3	0.3-5.1	4[a]	0.4-5.2	4[a]	0.8-5.2	3.6	0.4-4.8	22.8[b]	3.4-25.6
Observation group														
Preoperative	3	1.2-4.8	3.3	0-5.1	3.3	0-5.1	3.6	0-5.6	3.6	0.8-5.2	3.6	0-5.2	21.6	2-25
Postoperative	4.2[ca]	3-6	4.5[ca]	3-6	4.5[ca]	3-6	4.8[ca]	2.8-6	4.8[ca]	2.8-6	4.8[ca]	2.8-6	28[ca]	21.4-35

FSFI: Female Sexual Function Index. The values marked with "a" were compared to the pretreatment values within the same group, yielding a significant difference at p<0.01. Similarly, the values marked with "b" showed a significant difference when compared to the pretreatment values within the same group, but at a significance level of p<0.05. Furthermore, the values marked with "c" exhibited a significant difference when compared to those in the control group, also at p<0.01.

before and after the intervention, while the rank sum test of two independent samples was used for data comparison between the control group and the observation group. For normally distributed data, the paired sample t-test was used for within-group comparisons before and after the intervention, while the independent sample t-test was employed in comparisons between groups. A p-value <0.05 was considered statistically significant.

RESULTS

The characteristics of the 126 participants with FSD are shown in Table 1. There was no significant difference in the general condition of participants between the two groups, thus demonstrating homogeneity. Prior to treatment, there was no statistically significant difference in FSFI scores between the two groups (all p>0.05). Prior to treatment, there were no statistically significant differences (p>0.05) observed in the comparison of five indicators and total scores of the Glazer pelvic floor EMG protocol between the two groups. There was no significant difference in number of pain points and sum of VAS scores between the control group and the observation group before the intervention (p>0.05). Before treatment, there was no statistically significant difference in PFMS between the two groups (p>0.05).

Female Sexual Function Index score

After treatment, the observation group manifested significant improvements in desire, arousal, lubrication, orgasm, satisfaction, and pain compared to pretreatment levels (all p<0.01). The control group only showed improvements in orgasm and satisfaction (p<0.01) compared to pretreatment levels. Furthermore, the magnitude of improvement in both the FSFI total score and each individual subitem within the observation group surpassed that observed in the control group, demonstrating statistical significance (p<0.01; Figure 2; Table 2).

Glazer pelvic floor EMG

After treatment, an improvement was observed in the pre-resting EMG in the observation group compared to before treatment (p<0.01). Compared to before treatment, the tonic contraction value and total score of pelvic floor in the control group were improved (p<0.01). There was no significant difference in the total pelvic floor score between the two groups after treatment. However, the improvement of the pre-resting value and post-

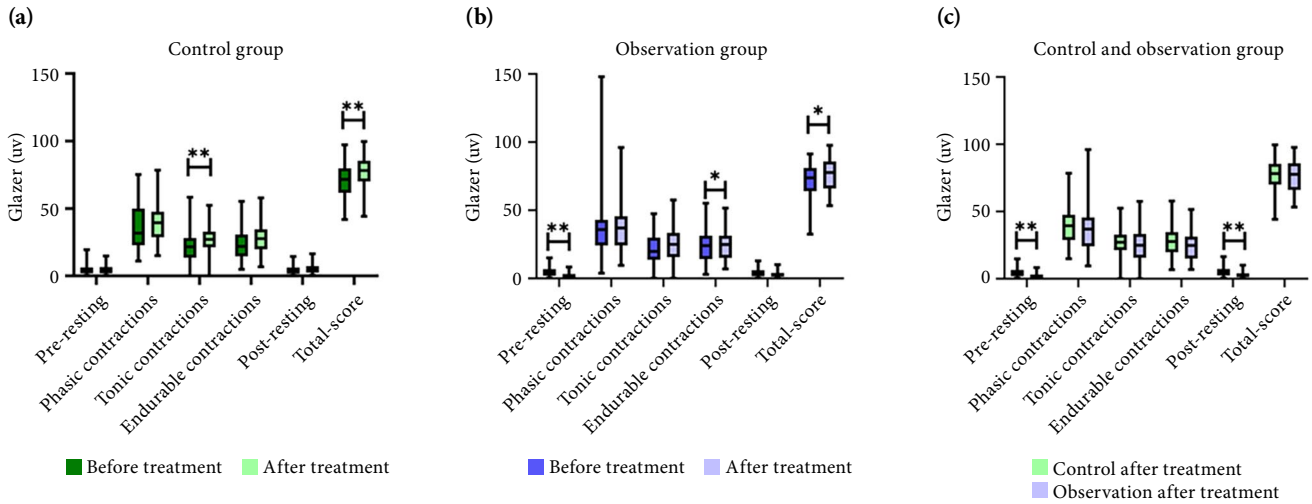

Figure 3. Comparison of Glazer pelvic floor electromyography results.

resting value in the observation group after treatment was significantly greater than that in the control group after treatment (p<0.01; Figure 3).

Pain map

Number of pain points and sum of VAS scores in the observation group were significantly decreased after treatment compared to preintervention (p<0.01; Table 3). Meanwhile, the observation group demonstrated a significantly greater decrease in number of pain points and sum of VAS scores than the control group (p<0.01; Table 3).

Pelvic floor muscle strength

After intervention, both groups exhibited a significant improvement in PFMS compared to pretreatment levels (p<0.01; Table 4). Moreover, the observation group demonstrated a significantly

TABLE 3
Comparison of the pain map

		Number of pain points		The sum of VAS score	
		Preoperative	Postoperative	Preoperative	Postoperative
	n	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Control group	63	8.25±3.94	8.11±3.90	14.89±13.21	14.02±11.68
Observation group	63	8.71±4.26	2.60±2.21[ab]	14.78±11.08	2.84±2.63[ab]
t		−0.55	9.18	0.05	7.48
p		0.58	<0.01	0.96	<0.01

SD: Standard deviation; VAS: Visual analogue scale. The values marked with "a" were compared to the pretreatment values within the same group, yielding a significant difference at p<0.01. The values marked with "b" exhibited a significant difference when compared to those in the control group, also at p<0.01.

TABLE 4
Comparison of pelvic floor muscle strength

Group	n	Time	Level I	Level II	Level III	Level IV	Level V
Control group	63	Preoperative	1	5	18	36	3
		Postoperative	0	6	11	23	23[a]
Observation treatment group	63	Preoperative	4	2	21	29	7
		Postoperative	0	0	9	25	29[ab]

Values marked with "a" were compared with the same group before treatment, p<0.01. Values marked with "b" were compared with the control group, p<0.05.

greater enhancement in PFMS than the control group after therapy ($p<0.05$; Table 4).

Safety and adverse reaction

No severe adverse reactions were found in the current study. Only one case of mild pain occurred during the clinical trial. No other related complications occurred during the trial.

DISCUSSION

The classification of FSD is derived from the linear model of the sexual response cycle, which encompasses desire, arousal, and orgasm as three progressive stages of sexual response.[21] In 1998, the Sexual Function Health Council of the American Foundation for Urologic Disease developed an internationally recognized classification system for FSD based on the Diagnostic and Statistical Manual of Mental Disorders-IV[11] and the International Classifications of Diseases-10.[13] This classification divides FSD into four categories: sexual desire disorder, sexual arousal disorder, orgasm disorder, and sexual pain disorder. A total score of FSFI <26.55 indicates presence of FSD.[17] Cattani et al.[22] concluded that instrumental vaginal birth increased the odds for sexual dysfunction. Anzaku and Mikah[23] hypothesized that the etiology of postpartum FSD may be attributed to pelvic floor muscle anatomy and dysfunction. Vaginal delivery and episiotomy were predictive of sexual morbidity.[23] Alterations experienced after delivery, including pain during intercourse, lack of sexual desire, vaginal dryness, and inability to reach orgasm, can significantly impact women's sexual response cycle.[24]

Various treatment methods have been employed in the past for FSD following vaginal birth, including psychotherapy, sexual behavior therapy,[25] biofeedback combined with electrical stimulation therapy,[26] and structured PFMT.[27] However, there is low-quality evidence that structured PFMT leads to improve sexual function up to 12 months postpartum.[28] Despite these treatment options providing some relief, patients often fail to achieve satisfactory improvement in FSD due to the complex nature of postpartum pelvic floor injury,[29] challenges associated with mastering structured PFMT movements, and the limited efficacy of such training. This issue is particularly prominent among women who have undergone vaginal delivery as it may result in heightened vaginal sensitivity. Patients with FSD demonstrated increased susceptibility to fatigue in their pelvic floor muscles. Furthermore, recent studies indicated that myofascial trigger point release can decrease muscle fatigue and relieve pain symptoms.[7] Therefore, we advocate for the use of trigger point release techniques as a primary approach to improving FSD.

We observed that the combination of trigger point release and structured PFMT was more effective than structured PFMT alone in improving FSD in the short-term. This is the first randomized controlled trial to assess the impact of trigger point release plus structured PFMT versus structured PFMT alone in treating FSD following vaginal birth. Previous studies have demonstrated that integrating myofascial trigger point release with pelvic training can alleviate chronic pelvic pain in both men and women. For example, Anderson et al.'s[30] analysis of 138 men with chronic pelvic pain syndrome showed that combining myofascial trigger point release with pelvic training provided superior relief from pain and urinary symptoms compared to traditional therapy. Similarly, Xu et al.'s[31] study on 68 women with pelvic pain found that a combination treatment of myofascial trigger point release and pelvic training significantly reduced pain intensity and EMG levels of the pre-test resting and post-test resting baseline. Similar results were observed in our study as well.

Pelvic myofascial trigger point release has the potential to enhance sexual desire and promote sexual arousal. Based on the result analysis in this study, it revealed that the observation group exhibited significantly greater improvements in both sexual desire and sexual arousal compared to the control group. Sexual desire disorder refers to a persistent or recurrent lack of subjective desire for sexual activity.[14] This study showed an increase in frequency of sexual intercourse following pelvic trigger point release. Female sexual arousal disorder refers to a persistent or recurrent, partial or complete inability to obtain or maintain vaginal lubrication and swelling responses during sexual arousal or even after sexual activity is completed.[13] The observation group demonstrated superior results compared to the control group regarding FSFI's single indexes for both sexual arousal and vaginal lubrication, indicating an improvement in female sexual arousal disorder as well.

The results of this study demonstrated a statistically significant improvement in the orgasm index for both two group before and after treatment.

However, it was observed that participants in the observation group exhibited a significantly greater improvement in orgasm disorder following treatment. Pelvic floor muscle training enhances proprioception of muscle damage by facilitating awareness of contraction and expansion sensations within the pelvic floor muscles during autonomous movement.[32] Myofascial trigger point release loosens the tension in the vagina and improves sensitivity to stimulation of the clitourethrovaginal complex, thus helping women achieve orgasm.[33] Consequently, this combined approach is more effective than biofeedback therapy alone.

The most prevalent sexual dysfunction following vaginal delivery in this study is sexual pain disorder, with 85.7% of participants in this study experiencing this condition. Sexual pain disorder is divided into pain during intercourse, vaginal cramps, and noncoital sexual pain disorder.[13] Pain during intercourse is the main symptom of postpartum FSD. Pain during intercourse refers to persistent or recurrent pain in the vulva, vagina, or lower abdomen during sexual contact.[34] Patients often exhibit reduced muscle strength, abnormal EMG values, and muscle fatigue.[11] Abnormalities in PFMS and EMG values are commonly observed in postpartum patients experiencing sexual pain.[18] In 1997, Glazer et al.[35] introduced the Glazer pelvic floor EMG as a standardized procedure for measuring pelvic floor muscle function. The pre-resting value in the Glazer pelvic floor EMG represents the baseline level of EMG measured during periods of muscular quiescence, reflecting muscle fascia tension. An increase in pre-resting EMG value indicates heightened tension within muscles, potentially indicating ischemia within these muscles which has been associated with sexual pain. Our results demonstrate that after treatment, participants in the experimental group had fewer pain points on the pain map, lower VAS scores, and lower pre-resting values on the Glazer EMG test compared to the control group. Therefore, pelvic trigger point release can significantly relieve pain during intercourse.

The etiology of postpartum sexual dysfunction may be associated with the anatomy and dysfunction of pelvic floor muscles.[23] Among all participants included in the experiment, a significant proportion of pelvic floor pain was attributed to the muscles associated with lateral incision, and the pain scores ranked from high to low for perirethral area, obturator internus, iliococcygeus muscle, and coccygeus muscle. During natural delivery, perineal tissues may sustain injuries such as laceration or lateral incision.[34] The pain values of the lateral incision associated with vaginal birth were significantly improved in participants who underwent myofascial trigger point release.

This study demonstrated that pelvic myofascial trigger point release effectively reduced tension in the pelvic myofascial tissue and alleviated sexual dysfunction. Myofascial trigger point release facilitated the resolution of myofascial adhesions, diminished soft tissue tension, and promoted detumescence and analgesia.[36] Pelvic myofascial trigger points, characterized by cord-like nodules within specific skeletal muscle areas involved in participants with FSD. They can elicit pain upon palpation and induce distant referred pain as well as sympathetic phenomena.[31] The release of pelvic trigger points involves relaxation of the tension band within these points to alleviate shortening. This process is also known as desensitization or inactivation. Treatment options for trigger points encompass invasive approaches (e.g., dry needling) as well as noninvasive modalities (such as shockwave therapy, foam rolling, and manual therapy).[37] The observation group demonstrated a significantly greater decrease in number of pain points and sum of VAS scores than the control group.

Insufficient PFMS can lead to sexual dysfunction.[38] The combined action of slow and fast fibers is essential for maintaining normal physiological function of the muscles. Pregnancy and childbirth might result in muscle degeneration, leading to suboptimal PFMS after birth. Recent surveys have revealed a positive correlation between PFMS and sexual function.[39] The result in this study indicated that compared with the control group, the observation group showed significant improvement in PFMS following myofascial trigger point release therapy. This therapy not only enhanced the muscle strength of the participants but also effectively trained the pelvic floor muscles by improving their contraction ability, endurance and stability, improving postpartum sexual dysfunction.

This clinical pilot trial had several limitations that need to be considered. First, both short- and long-term effects need to be observed in clinical studies, but many participants changed their residence and were unable to accomplish the three-month follow-up due to COVID-19 (coronavirus disease 2019). Therefore, the

observation of mid- and long-term efficacy in this study was slightly insufficient, but the short-term efficacy was confirmed to be sufficient. Second, due to medical facility limitations, this trial did not utilize an accurate, digitized pelvic muscle strength test, but instead used the internationally recognized MOS to evaluate PFMS. Nevertheless, this did not affect our assessment of pelvic floor function, which was the nonprimary outcome. Future trials could use a more precise assessment method that detects pelvic muscle strength by placing a pressure probe into the vagina to collect pressure signals from the pelvic floor muscles to obtain more accurate clinical data. Lastly, the study was a single-center randomized controlled trial, and there were some limitations in inferring the results. Future multicenter randomized controlled trials are needed to further validate the conclusions.

In conclusion, this study showed that pelvic myofascial trigger point release and structured PFMT significantly improve the FSD compared to structured PFMT alone. The clinical effect and noninvasive procedure suggest that it provides a solution for the treatment of FSD. The current research indicated that pelvic myofascial trigger point release demonstrates improvement in sexual desire, arousal, and orgasm. Notably, it has rapid efficacy in alleviating sexual pain while concurrently enhancing PFMS of postpartum women following vaginal delivery. This study showed promising results, but further studies with a larger sample size are needed.

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