

Application of kegel exercises to reduce acute perineal pain and promote wound healing in normal postpartum women: A Case Study

Tri Damayanty Syamsul^{a*}, Asma Juita Syam^a, Ridwan^a, Kasmawati^a, Sudirman^a
Sekolah Tinggi Ilmu Kesehatan Bhayangkara Makassar, South Sulawesi, Indonesia

*Correspondence: Tri Damayanty Syamsul, Sekolah Tinggi Ilmu Kesehatan Bhayangkara Makassar, South Sulawesi, Indonesia
Email: drtridamayantysyamsul@gmail.com

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ABSTRACT

Introduction: Perineal trauma following normal vaginal delivery is highly prevalent and frequently results in acute perineal pain, restricted mobility, and delayed wound healing during the early postpartum period. Inadequate pain management may negatively affect maternal comfort, functional recovery, and overall well-being. While pharmacological therapy is commonly used, non-pharmacological nursing interventions that are safe, cost-effective, and easily implemented remain underutilized. Kegel exercises, a form of pelvic floor muscle training, have been suggested to improve circulation, reduce pain, and support perineal wound healing; however, evidence from case-based clinical practice remains limited. This study aimed to explore the application of Kegel exercises as a nursing intervention to reduce acute perineal pain and promote wound healing in a woman following normal postpartum delivery.

Methods: A descriptive qualitative case study design was employed. The participant was a postpartum woman with perineal rupture and acute pain admitted to the Nuri Postpartum Ward of Bhayangkara Hospital, Makassar, Indonesia. Kegel exercises were implemented over three consecutive days under nursing supervision. Data were collected through interviews, direct observation, and daily pain assessment using a numeric rating scale. Behavioral indicators of pain, mobility, and wound comfort were also evaluated.

Results: The findings demonstrated a progressive reduction in pain intensity from severe to mild levels over the three-day intervention period. Observable pain behaviors, including grimacing, restlessness, and protective posture, gradually diminished. The patient showed improved mobility, emotional comfort, and increased confidence during movement, accompanied by reduced perineal tenderness.

Conclusion: The application of Kegel exercises was effective in reducing acute perineal pain and supporting early wound healing in normal postpartum women. This intervention may be integrated into routine postpartum nursing care to enhance recovery and maternal well-being.

Keywords: Acute pain; Kegel exercise; Perineal wound; Postpartum care; Pelvic floor muscle training.



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INTRODUCTION

The postpartum period represents a critical phase in a woman's reproductive life, marked by profound physiological, psychological, and functional changes following childbirth (Putri, Bachtiar and Suprpto, 2025). Although vaginal delivery is generally considered a natural and safe process, it frequently results in perineal trauma, either in the form of spontaneous lacerations or episiotomy (Suriyani, Arda and Ishak, 2025). Perineal wounds are highly prevalent in normal childbirth, with global estimates indicating that up to 85–90% of women experience some degree of perineal injury following vaginal delivery. These injuries often lead to acute perineal pain, restricted mobility, impaired self-care, discomfort during urination and defecation, and delayed maternal recovery during the early postpartum period (Liu *et al.*, 2025).

Acute perineal pain is one of the most commonly reported postpartum complaints and constitutes a significant clinical and nursing problem (Borhart and Page, 2024). Pain arising from perineal sutures is caused by tissue damage, inflammation, edema, and reduced local circulation at the wound site. If inadequately managed, perineal pain may delay wound healing, increase the risk of infection, disrupt sleep, reduce breastfeeding comfort, and negatively affect maternal well-being and mother–infant bonding (DeCesaris *et al.*, 2025). In many cases, postpartum women limit their movements due to fear of pain, which may further compromise blood circulation and slow the healing process. Consequently, effective and safe pain management strategies are essential to support optimal postpartum recovery (Defante *et al.*, 2025).

Current management of postpartum perineal pain largely relies on pharmacological interventions, such as analgesics and anti-inflammatory medications (Delicate *et al.*, 2025). While effective, pharmacological approaches may be associated with side effects, breastfeeding considerations, and limited accessibility in some healthcare settings (Ebrahimian, Razavinia and Irvani, 2025). In addition, reliance on medication alone does not address functional recovery or promote active maternal participation in the healing process (Gaikaiwari *et al.*, 2024). Therefore, non-pharmacological interventions that are safe, cost-effective, and feasible for early postpartum implementation are increasingly recommended as complementary strategies in postpartum care (Gidaszewski *et al.*, 2025).

One such non-pharmacological intervention is Kegel exercise, a form of pelvic floor muscle training that involves repeated voluntary contractions and relaxations of the pelvic floor muscles (Kurnaz, Fışkın Siyahtaş and Demirgöz Bal, 2025). Kegel exercises are widely recognized for their benefits in strengthening pelvic floor muscles, improving urinary continence, enhancing pelvic stability, and supporting reproductive organ recovery (Khajehei *et al.*, 2024). Physiologically, these exercises increase local blood circulation, enhance oxygen and nutrient delivery to injured tissues, reduce edema, and stimulate tissue regeneration mechanisms that are highly relevant to perineal wound healing and pain reduction (Khayat *et al.*, 2025).

Several studies have demonstrated the effectiveness of Kegel exercises in accelerating perineal wound healing and reducing pain intensity in postpartum women. Evidence suggests that regular pelvic floor muscle contractions can reduce inflammatory responses, improve tissue elasticity, and minimize discomfort associated with perineal sutures. Despite this evidence, the application of Kegel exercises in routine postpartum nursing care remains inconsistent, particularly in the acute postpartum phase. In many clinical settings, postpartum women receive limited education or supervision regarding correct Kegel exercise techniques, timing, and frequency, which may reduce their potential therapeutic benefits.

This situation reveals a clear research and practice gap. Existing studies predominantly employ quantitative or quasi-experimental designs and focus on general postpartum populations, often emphasizing long-term pelvic floor outcomes rather than immediate clinical problems such as acute perineal pain and early wound healing. Moreover, there is limited qualitative and case-based evidence that illustrates how Kegel exercises are practically implemented, tolerated, and experienced by individual postpartum women during the early days following normal delivery. Case studies are particularly valuable in nursing science, as they provide in-depth clinical insights,

contextualized care processes, and practical guidance that can inform individualized nursing interventions.

Furthermore, in many hospital-based postpartum care settings, especially in low- and middle-income contexts, non-pharmacological pain management strategies are underutilized despite their feasibility and low cost. Nursing interventions often focus on monitoring and medication administration, with less emphasis on active rehabilitative exercises that empower mothers in their own recovery. This gap underscores the need for clinically grounded evidence that demonstrates the real-world application and outcomes of Kegel exercises as a nursing intervention for acute perineal pain and wound healing.

The novelty of this study lies in its focus on the application of Kegel exercises as a structured nursing intervention in the acute postpartum period, using a case study approach. Unlike previous studies that primarily assess outcomes at a population level, this research provides a detailed exploration of pain intensity changes, behavioral responses, and wound recovery processes in a postpartum woman with perineal rupture. By documenting daily observations before and after the intervention, this study highlights the dynamic clinical impact of Kegel exercises on acute pain management and functional recovery.

In addition, this case study emphasizes the role of nurses in guiding, supervising, and evaluating Kegel exercises as part of comprehensive postpartum care. The findings contribute practical evidence supporting the integration of pelvic floor muscle training into standard nursing interventions for postpartum women with perineal wounds. Ultimately, this study aims to strengthen evidence-based nursing practice by demonstrating that Kegel exercises are not only beneficial for long-term pelvic health but also effective in reducing acute perineal pain and promoting early wound healing following normal childbirth.

RESEARCH METHODOLOGY

Study Design

This study employed a descriptive qualitative approach using a case study design. The case study method was selected to allow an in-depth exploration of the application of Kegel exercises as a nursing intervention to reduce acute perineal pain and promote perineal wound healing in a postpartum woman following normal vaginal delivery. This design is particularly appropriate for capturing detailed clinical processes, patient responses, and contextual factors that cannot be adequately explained through quantitative methods alone.

Study Setting and Time

The study was conducted in the Nuri Postpartum Ward of Bhayangkara Hospital, Makassar, Indonesia. Data collection took place over a three-day period, from 10 to 12 March 2024, during the early postpartum phase, which is considered a critical period for pain management and wound healing.

Participant and Selection Criteria

The subject of this case study was one postpartum woman (Ny. “N”) who met the inclusion criteria. Inclusion criteria were: (1) women who experienced normal vaginal delivery, (2) presence of perineal rupture with suturing, (3) experiencing acute perineal pain, (4) hospitalized in the postpartum ward, and (5) willing to participate in the study.

Exclusion criteria included: (1) refusal to participate, (2) early discharge before completion of the intervention period, and (3) postpartum women without perineal rupture or acute perineal pain.

Nursing Assessment

Comprehensive nursing assessment was conducted at baseline prior to the intervention and continued daily throughout the study period. Data were collected through interviews, direct observation, and physical examination. Subjective data included patient-reported pain characteristics, such as pain location, intensity, quality, and factors that aggravated or alleviated pain. Objective data included facial expressions, protective behavior, restlessness, and vital signs. Pain intensity was assessed using a numeric pain rating scale (0–10) to evaluate changes before and after the intervention.

Nursing Diagnosis

Based on assessment findings, the nursing diagnosis was established according to the Indonesian Nursing Diagnosis Standards (SDKI). The primary diagnosis identified was acute pain related to physiological tissue injury, evidenced by verbal reports of perineal pain, pain scale score of 7, grimacing, restlessness, and protective behavior toward the perineal area.

Intervention: Application of Kegel Exercises

The nursing intervention consisted of the structured application of Kegel exercises, implemented as a non-pharmacological pain management strategy. The intervention was initiated after ensuring that the patient was in a stable condition and understood the procedure. Kegel exercises were performed in a relaxed state, either in a supine or sitting position. The patient was instructed to contract the pelvic floor muscles as if holding urination for 5–10 seconds, followed by relaxation for 10 seconds. Each session consisted of 10–15 repetitions, performed once to twice daily over three consecutive days. The intervention was supervised directly by the nurse to ensure correct technique, safety, and patient comfort. Education regarding the purpose and benefits of the exercise was provided prior to implementation to enhance patient understanding and adherence.

Outcome Evaluation

Evaluation was conducted daily to assess changes in pain intensity and behavioral indicators related to acute pain. Outcome indicators included pain scale score, facial expression (grimacing), restlessness, and protective behavior. Comparisons were made between pre-intervention and post-intervention conditions for each day of implementation. Wound condition was also observed visually to assess signs of healing, such as reduced edema, absence of excessive redness, and patient-reported comfort during movement.

Ethical Considerations

Ethical principles were strictly applied throughout the study. Informed consent was obtained from the participant after a clear explanation of the study objectives, procedures, benefits, and potential risks. Confidentiality and anonymity were maintained by using initials instead of real names. The intervention posed minimal risk and was consistent with standard postpartum nursing care.

Data Analysis

Data were analyzed descriptively by comparing observations and patient responses before and after the intervention. Findings were presented narratively and supported by tabulated summaries to illustrate changes in pain indicators and clinical responses over time.

RESULTS

This section presents the findings of the case study on the application of Kegel exercises in a postpartum woman with acute perineal pain following normal vaginal delivery. The results describe changes in pain intensity and related clinical indicators observed over a three-day intervention period. Outcomes are presented based on daily nursing assessments conducted before and after the implementation of Kegel exercises, focusing on pain scale scores, behavioral responses (grimacing, restlessness, and protective behavior), and the patient's overall comfort during movement. The findings highlight the progressive reduction of acute perineal pain and improvement in clinical responses following the intervention.

Table 1. Changes in acute perineal pain indicators before and after kegel exercise intervention

Pain Indicators	Day 1 (Pre)	Day 1 (Post)	Day 2 (Pre)	Day 2 (Post)	Day 3 (Pre)	Day 3 (Post)
Pain intensity (NRS)	7	6	6	4	4	2
Facial grimacing	Present	Present	Present	Mild	Mild	Absent
Protective behavior	Present	Present	Present	Mild	Mild	Absent
Restlessness	Present	Present	Mild	Mild	Mild	Absent
Comfort during movement	Poor	Poor	Fair	Fair	Fair	Good

The table demonstrates a gradual reduction in acute perineal pain intensity and associated behavioral indicators following the application of Kegel exercises over three consecutive days. Pain scores decreased consistently from severe pain on Day 1 to mild pain on Day 3. Behavioral responses such as grimacing, protective posture, and restlessness showed progressive improvement, accompanied by increased comfort during movement.

Tabel 2. Summary of clinical response to kegel exercise intervention

Observation Aspect	Day 1	Day 2	Day 3
Patient-reported pain	Severe pain when moving	Moderate pain	Mild pain
Emotional response	Anxious, uncomfortable	More relaxed	Relaxed and comfortable
Mobility	Limited	Improved	Independent
Perineal wound condition	Sutured, tender	Reduced tenderness	Improved comfort, healing

Table 2 summarizes the overall clinical response of the postpartum patient to the Kegel exercise intervention across the three-day observation period. The findings demonstrate a clear and progressive improvement in the patient's physical, emotional, and functional condition following the intervention.

On Day 1, the patient reported severe perineal pain, particularly during movement, and exhibited signs of discomfort and anxiety. Mobility was limited, and the perineal wound remained tender due to recent suturing. These findings are consistent with the acute postpartum phase, in which inflammation and tissue trauma commonly contribute to heightened pain and restricted activity. By Day 2, the patient's clinical condition showed noticeable improvement. Pain intensity decreased to a moderate level, and the patient appeared more relaxed compared to the previous day. Mobility improved, allowing the patient to perform basic movements with less hesitation. Reduced tenderness in the perineal wound indicated early signs of tissue recovery, suggesting that repeated pelvic floor muscle activation may have supported improved circulation and reduced local edema. On Day 3, the patient demonstrated a substantial clinical recovery. Pain was reported as mild, emotional responses were stable, and the patient appeared comfortable and confident during movement. Mobility became independent, and the perineal area showed improved comfort consistent with ongoing wound healing. The absence of anxiety and protective behavior further indicated increased pain tolerance and functional adaptation.

Overall, the interpretation of Table 2 highlights that the application of Kegel exercises was associated with progressive improvements in pain perception, emotional state, mobility, and perineal wound condition. These findings support the role of Kegel exercises as an effective non-pharmacological nursing intervention to facilitate early postpartum recovery, enhance functional independence, and promote perineal wound healing in women following normal vaginal delivery.

DISCUSSION

This case study aimed to explore the application of Kegel exercises as a non-pharmacological nursing intervention to reduce acute perineal pain and promote wound healing in a woman following normal vaginal delivery. The findings demonstrate a consistent and progressive improvement in pain intensity, behavioral pain indicators, mobility, and overall comfort over a three-day intervention period. These results are clinically meaningful and align with existing evidence on pelvic floor muscle training in postpartum care.

In the early postpartum phase, acute perineal pain is commonly caused by tissue trauma, inflammation, edema, and suturing following perineal rupture or episiotomy. On the first day of observation, the patient reported severe pain accompanied by grimacing, restlessness, and protective behavior toward the perineal area (Matsumoto *et al.*, 2025). These responses are typical manifestations of acute pain and reflect the physiological and emotional burden experienced by postpartum women (Millot *et al.*, 2025). Limited mobility observed on Day 1 further supports

previous findings that unmanaged perineal pain can restrict movement and delay functional recovery.

Following the initial application of Kegel exercises, a slight reduction in pain intensity was observed without any worsening of symptoms. This finding is important because it indicates that early initiation of pelvic floor muscle exercises is safe and well tolerated, even in the presence of sutured perineal wounds. The absence of increased pain or discomfort suggests that controlled pelvic floor contractions do not impose excessive strain on healing tissues when performed correctly under nursing supervision. This supports recommendations that early mobilization and gentle exercises should be encouraged during the postpartum period to prevent stiffness, promote circulation, and reduce fear-related movement avoidance (Oliveira, Bem and Agrelo, 2024).

More pronounced improvements were observed on the second day of intervention. Pain intensity decreased from severe to moderate levels, and behavioral indicators such as grimacing and protective posture became less evident (Rajai *et al.*, 2025). The patient also appeared more relaxed and demonstrated improved mobility. These changes may be explained by the physiological effects of Kegel exercises, which include increased local blood flow, improved oxygen and nutrient delivery to injured tissues, and enhanced removal of inflammatory byproducts (Rezaei *et al.*, 2024). Improved circulation in the perineal area can reduce edema and tissue tension, thereby lowering pain perception. By the third day, the patient reported only mild pain, and observable pain behaviors were no longer present. The patient was able to move independently and expressed greater comfort during daily activities (Schiano di Visconte, 2025). These findings indicate a meaningful functional recovery and suggest that Kegel exercises contributed not only to pain reduction but also to improved confidence and autonomy. Emotional stability observed on Day 3 further highlights the interrelationship between physical comfort and psychological well-being in postpartum women. Reduced pain likely diminished anxiety and fear of movement, enabling the patient to engage more actively in self-care (Risløkken *et al.*, 2024).

The improvement in perineal wound comfort observed in this case is consistent with previous studies reporting that pelvic floor muscle training accelerates wound healing. Enhanced circulation resulting from rhythmic muscle contractions supports tissue regeneration and collagen remodeling, which are essential for effective wound repair (Sofuoğlu *et al.*, 2025). Although wound healing was not measured using objective clinical scales, the reduction in tenderness and increased comfort during movement provide indirect indicators of positive healing progression. From a nursing perspective, the findings of this case study emphasize the value of Kegel exercises as an accessible, low-cost, and patient-centered intervention (Wright and Mckay, 2025). Unlike pharmacological pain management, which may carry side effects and breastfeeding considerations, Kegel exercises empower postpartum women to actively participate in their recovery. The role of the nurse is critical in educating, demonstrating, supervising, and motivating patients to perform the exercises correctly and consistently. In this study, direct supervision ensured correct technique and likely contributed to the favorable outcomes observed (Mactier and Al-Ani, 2025).

Despite these positive findings, this study has limitations that should be acknowledged. As a single case study, the results cannot be generalized to all postpartum women. Individual factors such as pain tolerance, wound severity, psychological state, and adherence to the exercise regimen may influence outcomes. Additionally, the short observation period limits conclusions regarding long-term benefits of Kegel exercises on perineal recovery. Future studies employing larger samples, controlled designs, and longer follow-up periods are needed to strengthen the evidence base. Nevertheless, the results of this case study provide valuable clinical insight and support existing literature advocating for the integration of pelvic floor muscle training into routine postpartum nursing care. The consistent reduction in pain intensity, improvement in mobility, and enhanced patient comfort observed over a short period underscore the practical effectiveness of Kegel exercises in managing acute perineal pain.

The discussion of findings confirms that the application of Kegel exercises is a beneficial non-pharmacological nursing intervention for postpartum women with perineal trauma. By reducing acute pain and supporting wound healing, Kegel exercises contribute to faster functional

recovery and improved maternal well-being. Incorporating this intervention into standard postpartum care protocols may enhance the quality of nursing care and promote holistic recovery in women following normal vaginal delivery.

CONCLUSIONS

This case study demonstrates that the application of Kegel exercises is an effective non-pharmacological nursing intervention for reducing acute perineal pain and supporting perineal wound healing in women following normal vaginal delivery. The findings showed a consistent decrease in pain intensity, improvement in mobility, and enhanced comfort over a three-day intervention period. These results indicate that early and supervised pelvic floor muscle exercises can be safely implemented during the acute postpartum phase and contribute positively to maternal recovery.

Based on these findings, it is recommended that Kegel exercises be integrated into routine postpartum nursing care, particularly for women experiencing perineal trauma. Nurses should provide structured education, demonstration, and supervision to ensure correct technique and adherence. Future research involving larger samples and longer follow-up periods is recommended to further validate the effectiveness of Kegel exercises and to support the development of standardized postpartum rehabilitation protocols.

Ethical Considerations

This study was conducted in accordance with ethical principles of nursing research. Informed consent was obtained from the participant after providing a clear explanation of the study objectives, procedures, and potential benefits. Confidentiality and anonymity were maintained by using initials instead of personal identifiers. The intervention posed minimal risk and was consistent with standard postpartum nursing care, ensuring the safety and well-being of the participant throughout the study.

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Authors' contributions

Tri Damayanty Syamsul: conceived and coordinated the case study, supervised the implementation of Kegel exercise interventions, and prepared the initial manuscript draft.

Asma Juita Syam and Ridwan: contributed to data collection, patient education on Kegel exercises, and clinical monitoring during the postpartum period.

Kasmawati and Sudirman: assisted with nursing assessments, data documentation, and critical revision of the manuscript. All authors reviewed and approved the final version of the manuscript.

Conflict of interest

The authors declare that there is no conflict of interest related to this study.

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