Global Medical and Health Communication

Online submission: https://ejournal.unisba.ac.id/index.php/gmhc
DOI: https://doi.org/10.29313/gmhc.v12i2.13736

GMHC. 2024;12(2):152–157
pISSN 2301-9123 | eISSN 2460-5441

RESEARCH ARTICLE

Effectiveness of Kegel Exercises on Perineal Wound Healing among Postpartum Women

Desta Ayu Cahya Rosyida, Nina Hidyatunnikmah
Midwifery Study Program, Faculty of Health Sciences, Universitas PGRI Adi Buana Surabaya, Surabaya, Indonesia

Abstract

Perineal wound refers to a laceration or wound that occurs along the birth canal (perineum) due to the delivery process. Wound healing is a method involved in replacing and repairing damaged tissue's capacity. This study aims to determine the effectiveness of Kegel exercises on perineal wound healing. It was a quasi-experimental study with one group pretest-posttest design conducted in March–May 2023. Forty-five women with perineal wounds at the Arosbaya Public Health Center, a reputable healthcare facility in Bangkalan, East Java province, Indonesia known for its comprehensive postpartum care, were selected as the study samples through a random sampling technique. The pre-test was done by observing the perineal wound before doing Kegel exercises. At the intervention stage, respondents did Kegel exercises daily for seven days. The post-test was carried out on day 7, and then observation of the perineum wound was carried out. Data were collected using an observation sheet. T-test was applied for the statistical tests. The study results show that after carrying out Kegel exercises, the majority of the 45 respondents experienced changes; namely, 25 people experienced good wound healing, and the remaining 20 experienced poor wound healing. The calculated t value was higher than the t table value (−16.523>−2.015) and had a significance value of <0.05 (0.000<0.05). This study's findings have practical implications for postpartum care, as they highlight the potential of Kegel exercises in promoting perineal wound healing, thereby enhancing the knowledge and practice of healthcare professionals and postpartum women.

Keywords: Kegel exercises, perineal wound, postpartum

Introduction

Childbirth often causes perineal tears or lacerations in both primigravidas and multigravidas with a stiff perineum. Perineal tears often occur during childbirth, which makes midwives try to find interventions with the slightest risk.[1] Perineal tear can occur spontaneously or due to an episiotomy to widen the birth canal.[2–6] Delayed healing of perineal wounds can increase the risk of infection.[2,3,5,6]

Barriers to the healing process of perineal episiotomy wounds include lack of nutrition that slows down the healing process, the bad habit of smoking at a young age, an increase in corticosteroids levels due to stress, as well as disturbances in oxygenation which interfere with collagen synthesis that further inhibits epithelialization and causes infection.[3,7] There are several impacts of incorrect treatment of perineal wounds. Lochia and damp conditions will support the growth of bacteria, which can cause perineal infection. In addition, such infection can spread to the bladder tract and even postpartum maternal death.[8] Slow and poor management of complications may lead to death.

In Indonesia, 75% of women who give birth vaginally experience perineal wounds. In 2020, it was found that 57% of women had perineal sutures (28% due to episiotomy and 29% due to spontaneous lacerations). The prevalence of women in labor who experienced perineal wounds in Indonesia in the 25–30 year and 35–39 age groups were 24% and 62%, respectively.[9] Further studies in 2016 revealed that the incidence of perineal wound infections among postpartum women was 1.22%. Maternal mortality rate (MMR) data in East Java province in 2022 revealed 46 cases of maternal death due to bleeding, 41 cases due to hypertension, 1 case due to infection, 8 cases due to circulatory system disorders, and 0 cases due to metabolic

Received: 21 May 2024; Revised: 13 August 2024; Accepted: 14 August 2024; Published: 22 August 2024

Correspondence: Desta Ayu Cahya Rosyida. Midwifery Study Program, Faculty of Health Sciences, Universitas PGRI Adi Buana Surabaya. Jln. Dukuh Menanggal XII, Surabaya 60234, East Java, Indonesia. E-mail: desta@unipasby.ac.id

disorders.[10]

Based on data obtained at Private Midwife of Yuni Sri Rahayu, there were 13 women with normal delivery from November–December 2012, wherein 10 of them experienced perineal rupture. Seven of the ten women who experienced perineal rupture were primiparous (70%), and three were multiparous (30%).[11]

Perineal tears occur in almost all vaginal births, whether the tears are intentional with an episiotomy or spontaneous tears as a result of childbirth.[3–6,12] Some perineal tears require suturing; some do not.[4,5,12] Data derived from the Arosbaya Public Health Center (PHC) showed that there were 425 postpartum women in 2022, and almost half of them experienced perineal lacerations. A previous study explained that perineal wound treatment is done by keeping the perineum dry and clean, washing perineal wounds with clean water and soap every time after urinating or defecating, avoiding using hot water for soaking, and preventing the administration of traditional medicine.[13–15] In such a study, 3 of 24 respondents had poor wound healing, and four had good wound healing. Meanwhile, overall, wound healing was good by 17 respondents.[16] A study by Patterson et al.[15] found that 56% of respondents carried out early mobilization, and 48.8% of respondents who were given antibiotics experienced rapid wound healing. Early mobilization can be performed through Kegel exercises to tighten the abdominal and pelvic floor muscles. Based on several Kegel exercise research results can increase blood circulation to the vaginal area. Pregnant blood oxygen and lots of nutrients are needed to regenerate vaginal cells and tissue that experienced episiotomy damage.[15,16]

The impact of perineal rupture includes infection in the suture wound, which can spread to the bladder canal or birth canal so that it can result in complications. Moreover, bleeding can also occur due to open blood vessels that do not heal completely.[17]

Wound healing is a process of replacement and repair of the function of damaged tissue, which involves the integration of physiological processes.[18] The healing properties of all wounds are the same, with variations depending on the location, severity, and extent of the injury. The healing time for the perineal wound is stated as fast if it lasts within 1–6 days, as normal if it stays within 7–14 days, and as long if it remains within ≥14 days.[19]

Pharmacological and non-pharmacological interventions can accelerate the healing process of perineal wounds. One example of non-pharmacological interventions is Kegel exercises.

Kegel exercises act as a therapy for stress and urge incontinence to strengthen the pelvic floor or the pubococcygeal muscles. Kegel exercises aim to strengthen the pelvic muscles.[20] Kegel exercises have the benefit of helping postpartum healing by alternately contracting and releasing the pelvic floor muscles, namely by making the stitches tighter, accelerating healing, relieving hemorrhoids, and improving urine control.[21] Frequent Kegel exercises can increase circulation in the perineum, thereby accelerating healing and reducing swelling. Patients can do Kegel exercises immediately after childbirth regularly every day so that it will help perineal suture healing.[22] A study by Sheng et al.[23] explained that a lack of time and motivation was a barrier to Kegel exercises in postpartum women. Such a study also found information regarding the importance of husband support towards physical activity. Postpartum women who received support from their husbands would have the motivation to do Kegel exercises.

A study conducted by Wojcik et al.[16] regarding the effectiveness of Kegel exercises and deep breathing relaxation on perineal pain among postpartum women showed a difference in perineal pain before and after Kegel exercises and deep breathing relaxation. In addition, Kegel exercises were more effective than breathing relaxation.

Based on preliminary data conducted at Arosbaya PHC, there were 45 of 125 postpartum women in the last three months experienced first-third degrees perineal lacerations and had never performed Kegel exercises.

This study aims to determine the effectiveness of Kegel exercises in healing perineal wounds among postpartum women with first-third-degree lacerations.

Methods

This was a quasi-experimental study with one group pretest-posttest design and pre-test by observing the perineal wound before doing Kegel exercises. At the intervention stage, respondents did Kegel exercises daily for seven days. The post-test was carried out on day 7, and then observation

of the perineum wound was carried out. The population in this study involves all postpartum women at Arosbaya PHC, Bangkalan regency, Madura, East Java province, Indonesia known for its comprehensive postpartum care, with as many as 51 people. Based on the result of sample calculation using the Slovin formula, 45 people were selected as the study samples through a random sampling technique. This study was conducted for three months, from March to May 2023. The independent and dependent variables were the Kegel exercise technique and perineal wound healing. The independent variable of the Kegel exercises technique was assessed using a checklist/standard operating procedures guided by the researcher while performing the intervention. Further, the researcher determined the intervention categories. The dependent variable of perineal wound healing was assessed through observation. Bivariate analysis was performed on both variables that were hypothesized to be related or correlated. A normality and homogeneity test was previously applied before the data analysis test. The Kolmogorov-Smirnov test was used for the normality test, while the one-way ANOVA test was applied for the homogeneity test. If the p-value was <0.05, it indicated that the data were not normally distributed, then the Wilcoxon test was used for the data analysis test. If the p-value was >0.05, it noted that the data were normally distributed, then the sample t-test would be applied for the data analysis test. The current study had an ethical test at the Health Research Ethics Commission of the Faculty of Science Health, Universitas PGRI Adi Buana Surabaya, and it was declared to have passed the ethical review with Certificate number 079-KEPK.

Results

The result shows that all 45 respondents are the same age, between 21 and 35. Table 1 shows that the majority of respondents' education data is from senior high school (25 of 45). Respondent parity data is mostly primipara (26 of 45), and all respondents are unemployed/domestic.

Table 2 revealed that before being given Kegel exercises, the majority of respondents experienced moderate wound healing by 23 of 45 respondents. Furthermore, a small number of respondents experienced poor wound healing by 22 of 45 respondents. After being given Kegel exercises, the respondents experienced good wound healing by 25 respondents and 20 respondents had moderate wound healing.

Table 1 Frequency Distribution of Respondent Characteristics

Characteristics	n=45
Education	
Elementary to junior high school	12
Senior high school	25
Diploma/graduate	8
Parity	
Primigravida	26
Multipara	19
Grande multipara	0
Work	
Work	0
Not/housewife	45

Table 2 Frequency Distribution of Perineal Wound Healing among Postpartum Women

Perineal Wound Healing	Before n=45	After n=45
Good	0	25
Moderate	23	20
Poor	22	0

Based on Table 3, it was revealed that the majority of respondents performed good Kegel exercises (24 of 45). Table 4 shows that the mean value of perineal wound healing before Kegel exercises was 6.51 (SD=0.991), which is lower than after the exercise (SD=0.988).

Based on Table 5, it was found that most of the respondents with moderate wound healing performed good Kegel exercises technique by 11 of 45 respondents, and nine respondents performed moderate wound healing. On the other hand, most of the respondents with good wound healing performed good Kegel exercise

Table 3 Frequency Distribution of Kegel Exercises Technique

Kegel Exercises	n=45
Poor	5
Moderate	16
Good	24

Table 4 Kegel Exercises Technique and Perineal Wound Healing among Postpartum Women

Information	n=45
Perineal wound healing before intervention	
Mean±SD	6.51±0.991
Median (min–max)	7.00 (5–8)
Kegel exercises	
Mean±SD	2.42±0.690
Median (min–max)	3.00 (1–3)
Perineal wound healing after intervention	
Mean±SD	8.58±0.988
Median (min–max)	9.00 (7–10)

techniques, with 13 of 45 respondents; seven respondents performed moderate Kegel exercise techniques, and the remaining five respondents performed poor Kegel exercise techniques. Research shows that the more people who use Kegel well, the better the healing will be, with a p-value<0.05.

Discussion

The study results showed that most respondents had moderate perineal wound healing before Kegel exercises, 23 of 45 respondents, and the remaining 22 respondents had poor wound healing. The categories of wound healing were determined according to redness, edema, ecchymosis, discharge, and apposition (REEDA) scale. Redness, swelling, bleeding spots, fluid discharge, and poor approximation of laceration in the perineum were found.

Kegel exercises should be a routine action carried out by postpartum women. In such a goal, the role of midwives is crucial. Midwives can teach Kegel exercises when a woman is having a pregnancy check-up so that she understands the importance of Kegel exercises during the postpartum period, especially in reducing pain and healing wounds.[16]

Based on the research results, it can be seen that after performing Kegel exercises, most respondents experienced changes, with 25 of 45 people experiencing good wound healing and the remaining 20 of 45 people experiencing poor wound healing.

This finding aligns with a previous study that applied quasi-experimental with a two-group, pretest-posttest design. This study gave treatment to one group through Kegel exercises. The population and samples in the study were postpartum mothers with grade I and II perineal lacerations. The results of the Mann-Whitney statistical test showed an effect of Kegel exercises on the healing time of perineal wounds among postpartum mothers at Private Midwife Yeni Nurhayani.[24]

Kegel exercises had a significant influence on wound healing because it was found that respondents who regularly performed Kegel exercises had a fast healing process for perineal wounds. Kegel is part of postpartum care, so poor knowledge will affect the length of wound healing.[25]

In the statistical analysis test, a paired samples test was applied based on the pre-test or before intervention results and the post-test or after intervention using Kegel exercises. It was found a significance value of (0.000<0.05). Thus, it can be concluded that H0 was rejected and H1 was accepted, indicating the effect of Kegel exercises on perineal wound healing among postpartum women at Arosbaya PHC, Bangkalan. Another previous study showed that Kegel exercises

Table 5 Cross Tabulation between Perineal Wound Healing and Kegel Exercises Technique among Postpartum Women

Perineal Wound Healing	Kegel Exercises Technique			Total n=45
	Poor n=5	Moderate n=16	Good n=45	
Poor	0	0	0	0
Moderate	0	9	11	44
Good	5	7	13	56
p				0.000

significantly accelerated the healing of perineal wounds among postpartum women.[23] Kegel exercises performed regularly and consistently can help strengthen and tighten the perineal muscles, encouraging a faster healing process.The pubococcygeus muscles influence oxygenation circulation and facilitate blood circulation, thereby allowing new tissue growth to heal the suture wound (accelerating the proliferative phase).[26]

Kegel exercises have been known as valuable exercises in strengthening women's pelvic muscles.[26] Kegel exercises can also provide essential benefits during the healing process of perineal wounds after delivery.[16] Such exercises involve contraction and relaxation of the pelvic muscles, including the pelvic floor muscles, which can accelerate the healing process of perineal wounds.

The study finding is in line with a previous study which explained that Kegel exercises were more effective than deep breathing relaxation for perineal wound healing among postpartum women.[23]

After normal delivery, Kegel exercises can improve the recovery of perineal wounds in postpartum women. In addition, Kegel exercises can help increase blood circulation to the perineal area, increase tissue elasticity, and strengthen the pelvic muscles, thereby accelerating wound healing and reducing discomfort.

Conclusions

Kegel exercises had an effect on perineal wound healing among postpartum women. There is a need to provide information to postpartum mothers about providing obstetric services to perineal wound patients using Kegel exercises.

Conflict of Interest

All authors declared no conflict of interest.

Acknowledgment

We want to express our sincere gratitude to the parties who provided support during the study process, including the Head of Arosbaya PHC and postpartum women as respondents. Furthermore, we would like to thank Universitas PGRI Adi Buana Surabaya, especially the Research and Community Service Department, which funded this study through the University Grant program.

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