

Effect Of Postnatal Kegel Exercises on Episiotomy Pain and Wound Healing Among Primiparous Women

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Abstract

Background: Episiotomy is performed as one of the most common procedures that facilitate delivery and prevent complications. Pain and discomfort related to episiotomy interfere with women's daily activities during postpartum period. Kegel helps to keep blood flowing to the perineal areas, as well as helps to tone and firms the muscles in the vagina. **Aim of the study:** To examine the effect of postnatal Kegel exercises on episiotomy pain and wound healing among primiparous women.

Design: An intervention research design (time series) was adopted.

Setting: The study was conducted firstly at postpartum department, Fayoum Public Hospital, which is affiliated to the Ministry of Health as well as at mother's home for follow up.

Sample: A total of 152 postnatal mothers were randomly recruited for the study, only 138 completed the study.

Tools: Three data collection tools were used: 1) A structured interviewing questionnaire, 2) Wound healing assessment tool "Standardized REEDA scale; 3) Numerical analog scale (NAS).

Results: revealed that, no statistically significant differences between the two groups were found in relation to maternal characteristics. Concerning the primary outcome in relation to wound healing, a statistically significant difference was found ($P=0.00$) between groups, (study & control) at 8th and 14th days after the intervention. Regarding to pain intensity, postpartum mothers in the study group had less mean score regarding to pain intensity than those in the control group, statistically significant difference was found between both groups at 8th and 14th day after the intervention.

Conclusion: Practicing of postnatal Kegel exercises had a significant effect in decreasing perineal pain after episiotomy and accelerating healing of the incision.

Recommendation: Integrate the Kegel exercises as a main part of the routine hospital postnatal instructions for the women for its important role in improving the quality of women life in postnatal period.

Keywords: Kegel exercises, episiotomy, perineal pain

I. Introduction

Episiotomy can be defined as the surgery in which vaginal orifice is enlarged through an incision of the perineum. This surgery is done either during the second stage of labor or just before the delivery and this helps for a safe and easy labor. This surgery is commonly done for almost all women at their first delivery. Episiotomy involves some types, such as medio-lateral, median, lateral and J-shaped episiotomy. Of these, A medio-lateral episiotomy is the most frequent (*Durmaz, & Buğdayci, 2013*).

Episiotomy is often recommended by the World Health Organization (WHO) for some selected indications. The reason for this is that episiotomy prevents more extensive childbirth injury. In terms of surgical repair, it is worth noting that a single cut edge is easier to surgical repair than it is for an extensive jagged edge, or for multiple jagged edges. It is the only surgical procedure in obstetrics that is carried out without the patient's agreement. Remarkable as recurrent complications of episiotomies are accidental extension into the anal sphincter or rectum, excessive narrowing of the introitus, vaginal prolapse, recto-vaginal fistula. Other less frequent complications are pain and edema, increased blood loss, haematoma and infection and also psychological trauma as well as dyspareunia may sometimes occur (*Jacob, 2012*).

Many researchers have emphasized the potency of exercises during the time of postpartum. Of these, the Kegel exercise is the best one that can be done after a delivery. This involves the pelvic region and it can be done at home as well. Advantages of this exercise are: heal faster which occurs through increasing blood and oxygen flow to the tissue and facilitating the healing of any tears or episiotomies that the mother might experience at delivery. Practicing the Kegel exercises also facilitates flexibility of the tissue, reduces swelling, relieves the pressure on the incision and the surrounding tissue and might help with pain or tenderness due to scarring. It also helps to regain bladder control, strengthen pelvic floor muscles, and might increase vaginal lubrication during sexual arousal (*Eogan, etal, 2012*).

Unfortunately, Nearly 50% of women find it difficult to have the correct muscles for a Kegel contraction. Therefore, it is essential to have an early training to the correct use of this technique. To double-check that the woman uses the right muscles properly, she should insert one lubricated finger approximately 2cm inside the vagina. She should also rest her finger against the internal sidewalls because the woman squeezes so that she can feel the contracting of the pelvic floor muscles. This is similar to the movements by which urine flow starts and then stops (*Lowdermilk, etal, 2010*).

Of the health staff members, nurses are very important. They play a central role in providing care and health awareness to mothers during pregnancy, labor, and postpartum period and to improve the maternal and neonatal findings through preventing and/or reducing complications during or after surgery. They playing the roles of educators, nurses also raise postpartum mothers' awareness of the importance and benefits of doing postnatal exercises, particularly Kegel exercise that is pivotal for both preventing and reducing the postnatal complications in addition to enhancing, improving healing of episiotomy and reliving the pain. Furthermore, nurses also help mothers to detect the true pelvic floor muscle (*Inyang &Umoiyoho, 2012*).

Significance of the study

In spite of not being supported by evidence in daily practice, episiotomy is still one of the most frequent procedures in obstetrics. Statistics done by (*WHO, 2012*) has shown that roughly 30-90% of women suffering from vaginal delivery had episiotomy. (*WHO, 2012*) also reports that around 23% of women have health problems in the first month after delivery. This problem occurs because of episiotomy, i.e. the risk of perineal infections with episiotomy reaches 20%. Perineal pain is attributed to overstretching, edema, and muscle spasm that entails difficulties to practice motherhood daily activities and also negatively affects women's sleep. These complications result in physical, psychological, and emotional problems which collectively negatively affect women's overall health. In this context, several counter-actions have strongly been recommended ultimately aiming to accelerate the episiotomy wound healing as well as relieving the perineal pain. Most important of these counter actions is Kegel exercises which has a lot of advantages. It is not costing, influential, appropriate to postpartum women in many situations, and safe. It is a common method that promotes and accelerates the healing and decreases the perineal pain commonly occurring after episiotomy. It also facilitates restoration of muscle tone, stimulates circulation, and decreases the pressure on the incision as well as the surrounding tissue. In Egypt, there were scattered researches that are carried out to examine the effect of Kegel exercises on episiotomy pain and wound healing. In this context, the current study has one central goal: providing a remarkable evidence to the positive effect of Kegal exercises on both preventing and relieving episiotomy pain and accelerating wound healing.

II. Aim Of The Study

This study aimed at examining the effect of postnatal Kegel exercises on episiotomy pain and wound healing among primiparous women.

Research hypotheses

To fulfill the aim of this study, research hypotheses were tested:

- 1. Postpartum** mothers who perform Kegel exercises will have faster episiotomy wound healing better than those who do not.
- 2. Postpartum** mothers who perform and follow the Kegel exercises will have less perineal pain than those who do not.

Subjects And Methods .III

Research Design

An intervention, time series study design was used to achieve the aim of the study.

Setting:

The study was conducted, in two different settings; the Postpartum Department in Fayoum Public Hospital which is affiliated to the Ministry of Health, as well at mother's home for follow up.

Sample:

The sample size was calculated according to the following statistic formula $n = Z^2 \cdot p(1-p) / d^2$, the estimated size was 152 postpartum women who delivered by normal vaginal with episiotomy. The sample was selected according to the following inclusion criteria; age not exceeding 35 years, primiparous, singleton pregnancy, underwent mediolateral episiotomy, at least can read and write, free from any high risk condition in prenatal period, and willing to participate in the study. While the **exclusion criteria** were as follows, gestational age less than 37 or more than 42 weeks; mothers with BMI ≥ 30 , having any complications during previous deliveries, who have 3° or 4° perineal tear, delivered with instrument, having immediate postnatal complications. The sample was divided randomly into two groups (study & control), seventy six (76) postpartum mothers for

each group. The odd number of admitted mothers in the delivery list was taken as the study group, while the even number was taken as the control group. During the study, six participants from the study group and eight participants from the control group were excluded from the study since they did not follow the instructions as using extra medication, ointment, revealed postpartum complications so; the study was completed with 138 women (study group 70 & control group 68).

Tools for data collection

Three tools were used to collect data pertained to this study. These are:

- I. A structured Interviewing questionnaire.** This tool was developed by the researchers and included data related to:
 - A. The characteristics of the study sample as; age, marital status, educational level, occupation and telephone number.
 - B. Obstetric outcome as external length of episiotomy (by cm.), and weight of newborn (in kg.).
- II. Standardized REEDA scale:** Adopted from *Davidson (1974)*, REEDA scale was used to assess condition of episiotomy wound. REEDA Scale is a descriptive scale having a four point categorical score (0-3) that measures five components associated with the healing process they are including: Redness, Edema, Ecchymosis, Discharge and Approximation, scores ranged from 0 to 15. Lower wound healing score indicated better healing at the episiotomy site. The test-retest reliability coefficient of the REEDA scale has been demonstrated as $r = 0.70$
- III. Numerical analog scale (NAS):** Developed by *Mc Caffery, (1999)*, it was used to measure the intensity of perineal pain, rated from (0-10 points) with two end-points representing «No pain» and «Unbearable pain». The test-retest reliability coefficient of the NAS has been demonstrated as $r = 0.62$

Tools Validity and reliability

Tools were submitted to a panel of three experts in each of the following field: two maternity nursing and one of Obstetric medicine to test the content validity. Each of the experts was asked to examine the tools for content coverage, clarity, wording, length, format, and overall appearance. No modifications were carried out in the content.

Pilot Study

A total of 10% of the study sample was included in the pilot study in order to assess the feasibility of the study, accessibility of the sample and clarity of the tools, as well as determine time needed to answer the questions. All postnatal mothers who participated in the pilot research were included in the research main sample.

Ethical considerations:

An official permission was granted from the director of the previously mentioned Hospital. The researchers introduced themselves to postnatal mothers who met the inclusion criteria and informed them about the purpose of this research to obtain their acceptance to participate in the study. The researchers assured that, the research posed no risk or hazards on them. All postnatal mothers were informed that, participations in the research is voluntary and any one can withdraw from this research anytime without giving any reason. A verbal consent of the participant was taken before starting the study. Anonymity and confidentiality were assured.

Procedure:

Recruitment and follow-up of participants were carried out from January to August, 2015. The researchers attended the Postpartum Department three days per week starting at 9.00 a.m. to 2.00 p.m. Before conducting the study, permission was obtained from the head of Obstetric Department in the previously mentioned setting followed by obtaining oral acceptance from the women who agreed to participate in the study: Data collection was carried out through four phases: 1) interviewing; 2) assessment; 3) implementation and 4) evaluation.

Interviewing phase: Initial visits, the researchers met all postpartum mothers recruited for both groups for the first time at postnatal department within two hours after delivery at Fayoum Public Hospital. They were interviewed individually. The researchers asked questions in Arabic language and recorded the answers in the structured interviewing questionnaire; the interview lasted about 10 minutes for each mother.

Assessment Phase: In this phase, all postnatal mothers in both groups were examined firstly at the Postnatal Department within two hours after delivery by the researchers to measure the episiotomy incision length and collect the baseline data related to episiotomy pain and perineal status before the intervention by using numerical analog scale (NAS) and REEDA Scale. These assessments took about 20 minutes for each mother.

Implementation Phase: The study group received instructions to practice Kegel exercises in addition to routine hospital postnatal exercise, while the control group received instructions regarding routine hospital postnatal care only. The researchers began with the explanation of the advantages and the technique of Kegal exercises to the study group.

Technique of the Kegal exercise:

- Before applying the technique, the researchers taught the mothers how to recognize the accurate muscle, where to imagine that trying to stop her from passing gas and trying to stop the flow of urine midstream at the same time.
- The mothers advised and taught to insert a clean finger into the vagina before doing practicing Kegel exercises and if the mother feeling pressure around her finger, she is on the right track.
- The mother also was instructed to place a hand on her belly during the exercise to make sure that it is kept relaxed.
- Researchers performed vaginal examination during re-demonstration to ensure correct use of muscles.

In the absence of evidence regarding how many squeeze must be emerged, the researchers relayed on the recommendations from *Harvard Medical School ,(2011)*, as the following: The researchers told the mother to continue contracting the muscles for about 5 seconds and then to loosening them for 5 seconds and starting from the day after delivery. In the first week they were asked to perform this exercise at home, and repeat it 5 times per day (25 contractions each day) was performed. The researchers told the mother to relax for a period equal to the period of holding the contraction. During the second week, the mother was asked to repeat the exercise 10 times per day (50contractions each day) and increase the duration of holding to 6 seconds. They were asked to register the duration and frequency of the exercises performed daily, in the exercise diary (a follow up form) developed by researchers and there was a booklet handed to mothers to keep it in the home, act as guidance materials for the exercise's technique. Those in the study group were checked out whether they have performed exercises through telephone calls.

Evaluation Phase: The researchers met the postnatal mothers (study& control), in their homes at 3rd, 8th and 14th day after episiotomy to assess the pain intensity by using NAS and the condition of the perineal wound by using REEDA scale and recording the results in the follow up form.

Limitations of the study

1. Scattered researches and evidence that support the study.
2. Difficulty to follow up mothers at home.

Statistical analysis:

Data entry and statistical analysis were done using the Statistical Package for Social Science (SPSS) version 18.0 statistical software package. Results were presented as the frequencies, percentages. Independent – Samples t- Test analysis to test statistical significance of some variables and to test effectiveness of the intervention between the two groups. Statistical significance was considered at p-value < .05.

Table (1): Personal characteristics of the sample (study& control group).

Items	Study group n=70	Control group n=68	P-value
Age Mean±SD	21.57±4.60	21.05±4.14	0.68
Marital status Married Divorced	70(100) 0(0)	68(100) 0(0)	--
Educational level Can read & write Primary Secondary High	11(15.7) 15(21.4) 25(35.7) 19(27.1)	13(19.1) 16(23.5) 23(33.8) 16(23.5)	0.71
Occupation Housewife Working	50(71.4) 20(28.6)	42(61.8) 26(38.2)	0.62

Level of significance at p ≤0.05.
Highly significant at p ≤0.001.

Table (2): The obstetric outcome of the sample (study& control group).

Items	Study group n=70	Control group n=68	P-value
Weight(kg) of newborn, M±SD	3138±300.24	3213.43±430.84	0.36
Length of episiotomy(cm)	3.78±0.71	3.56±0.95	0.27

Level of significance at $p \leq 0.05$.
Highly significant at $p \leq 0.001$.

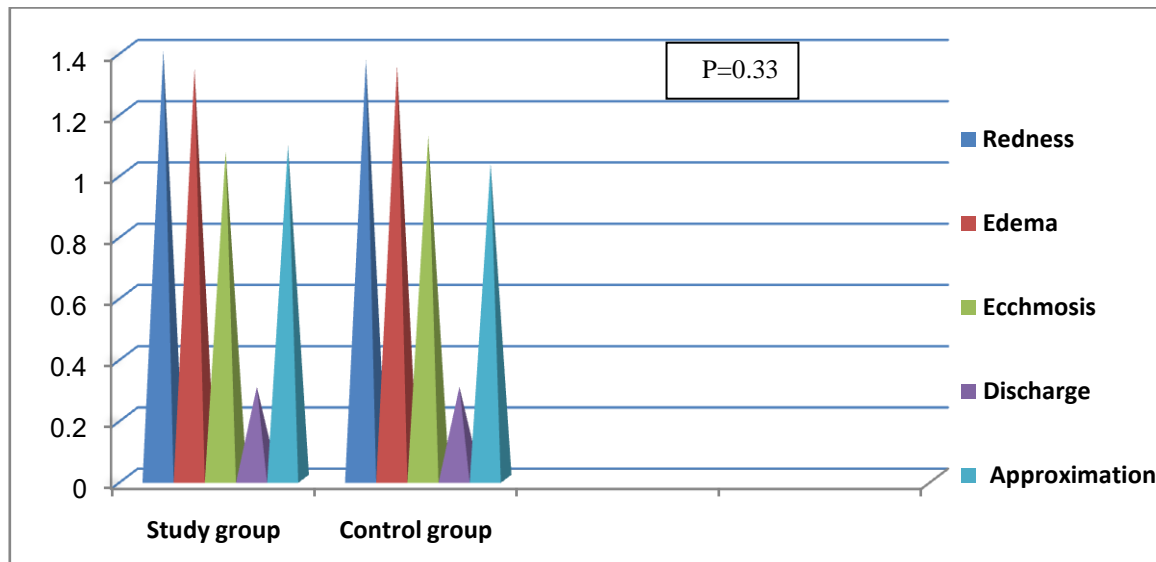


Figure (1): Comparison of REEDA parameter score (Mean±SD) between the study and control groups pre intervention (day of delivery).

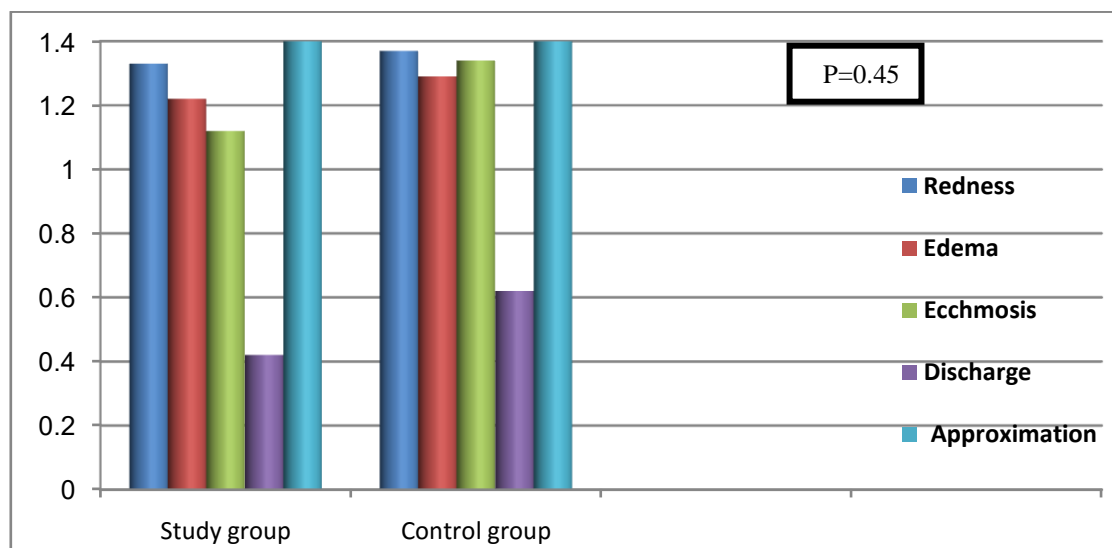


Figure (2): Comparison of REEDA parameter score (Mean ±SD) between study and control groups at the 3rd day after deliver (post intervention).

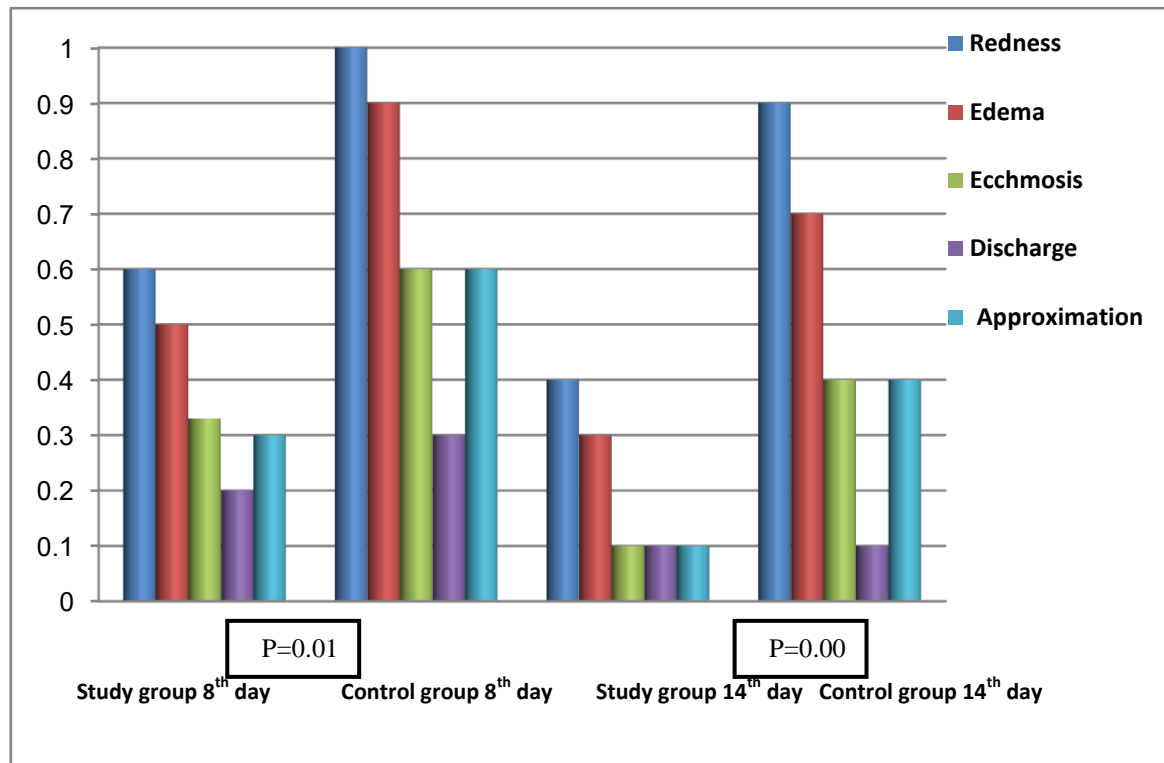


Figure (3): Comparison of REEDA parameter score (Mean ±SD) between the study and control groups at the 8th and 14th day after delivery (post intervention).

Table (3): Comparison of total REEDA score between study & control groups pre / post intervention at different days of assessment.

Healing status (REEDA scale, 0-15)	Study group N=70	Control group N= 68	t-test	P-value
Pre intervention				
Baseline(day of delivery)	5.03±0.74	5.12±0.77	0.813	0.33
Post intervention				
3 rd day	3.82±1.01	4.10±0.89	0.791	0.45
8 th day	2.25±1.45	3.12±1.50	2.568	0.01**
14 th day	0.32±0.6	1.07±0.3	9.884	0.000**

*Level of significance at $p \leq 0.05$.

**Highly significant at $p \leq 0.001$.

Table (4): Pain score analysis during postnatal period for both groups pre / post intervention at different days of assessment.

Pain (NAS, 0-10)	Study group N=70	Control group N=68	t-test	P-value
Pre intervention				
Baseline(day of delivery)	6.24±1.57	6.02±1.77	0.572	0.58
Post intervention				
3 rd day	5.27±1.67	5.43±1.68	0.802	0.69
8 th day	4.13±1.68	5.02±1.09	1.964	0.04*
14 th day	1.86±1.45	3.17±2.19	7.284	0.00**

*Level of significance at $p \leq 0.05$.

**Highly significant at $p \leq 0.001$.

IV. Results

Results of the study are presented in relation to personal demographic data, wound healing and pain intensity. Results of the study revealed that the mean age of the sample was 21.57 ± 4.60 for the study group and 21.05 ± 4.14 for the control group. All the participants in the two groups were married. As well, about one third of the study and control groups had certificate of the secondary school (35.7% & 33.8% respectively). Regarding to occupation, most of the participants in both groups were housewives (71.4% & 61.8% respectively). The two groups were homogeneous in their characteristics (table 1). The results indicated that there were no statistically significant differences between the two groups regarding weight of the neonate and length of episiotomy incision (table 2).

Primary outcomes (REEDA score)

The results indicated that there was no statistically significant difference between both groups (study and control) in terms of baseline data before intervention (day of delivery) regarding to REEDA score (5.03 ± 0.74 & 5.12 ± 0.77) respectively at $P= (0.33)$. Also, the results revealed no statistically significant difference between the study and control groups in terms of REEDA scores at 3rd day after the intervention. Although the previous state of significance at the 3rd day but the study group achieved better healing status than control group (3.82 ± 1.01 & 4.10 ± 0.89) respectively, at $p= (0.45)$. While there were highly statistically significant differences between both groups regarding REEDA score at 8th and 14th day after intervention (P- value 0.01 & 0.00 respectively) (**table 3**).

Secondary outcome (Pain intensity).

As regards self-reported pain intensity among both groups, **table (4)** revealed that there was no statistically significant difference between the two groups in relation to mean pain intensity at baseline data (**pre intervention at the day of delivery**) was 6.24 ± 1.57 in the study group and 6.02 ± 1.77 in the control group. In addition there was no statistically significant difference between the two groups regarding mean pain intensity at 3rd day after delivery, but still the pain intensity in study group is slightly less than in the control group; 5.27 ± 1.67 and 5.43 ± 1.68 for the study and control groups respectively ($p=0.69$). At next two follow-up assessments (8th & 14th day), intensity of pain in the study group was significantly lower than that in the control group ($P= 0.04$ & 0.00 respectively).

V. Discussion

The main aim of the study was to examine the effect of postnatal kegal exercises on episiotomy pain and wound healing among primiparous women. Findings of the present research supported the first hypothesis that, postpartum mothers who performed Kegel exercises had faster episiotomy wound healing better than those who did not. Also, supported the second hypothesis that postpartum mothers who performed and followed the Kegel exercises had less perineal pain than those who did not.

The present study findings showed that the mean age was 21.57 ± 4.60 for the study group and 21.05 ± 4.14 for the control group. Also, the present research results revealed that about slightly more than one third of the study sample in both groups had secondary educational level. The two groups were similar in their characteristics.

In relation to episiotomy healing which was measured by REEDA scale, the present study results indicated that, there was no statistically significant difference between the study and control groups at baseline data before intervention ($P= 0.33$). Also the result demonstrated that there was no statistically significant difference between the study and control groups at 3rd day after the intervention. In spite of the previous state of significance but the study group achieved better healing status (3.82 ± 1.01 & 4.10 ± 0.89 respectively). This may be due to that the 3rd day is a close time after delivery so; the mother may still have pain from suture and can't contract her muscles efficiently for the predetermined time.

The previous result agreed with (*Albers and Borders, 2013*), who studied the factors affecting the healing of episiotomy; the results revealed that Kegel exercises performed postnatal were found to not accelerate healing of wound after 72 hours. On the other hand, this result contradicted with (*Beckmann and Stock, 2013*), who studied the effect of Kegel exercises on episiotomy healing in postnatal women. The study revealed that, Kegel exercises accelerated the healing of wound within first 24 hours after the intervention.

In addition, there were highly statistically significant difference between both groups (study & control) regarding REEDA score at 8th and 14th day after delivery (post intervention, $P= 0.01$ & 0.00 respectively). The postnatal women who adopted Kegel exercises showed accelerated healing of episiotomy incision, by other meaning had lower wound healing score than those who did not adopt Kegel exercises. This may be due to the effect of Kegel exercises in increasing the circulation in this area, improving the tone and elasticity of perineum, so the perineal muscle became more healthier and strong which helped in healing of episiotomy wound faster, also the mother in this period had less perineal pain so she can contract the muscles efficiently according to the predetermined time and frequency.

This result is in congruence with (*Oya and Sevgul, 2015*), who studied the effects of prenatal perineal massage and Kegel exercises on the integrity of postnatal perineum, the result revealed that the effect of Kegel exercises occurs within 2 weeks after the intervention to help in improving the circulation in the perineum area, helping the perineum heal from an episiotomy or tearing and decreasing the chance of developing hemorrhoids. As well, the study agreed with (*Fleten and Nystad, 2012*), who reported that since pelvic floor muscle exercises performed from day after delivery until two weeks later would increase the tone and elasticity of perineum, increase the circulation in this area so healing of episiotomy wound would be faster.

On the other hand, the current result contradicted with (*McGuinness et al., 2013*), who reported that, there were no statistically significant difference between the two groups who adopted the Kegel exercises and who do not in terms of healing of perineal wound, 24 hours and three weeks after childbirth.

Concerning perineal pain, the present research showed that, there was no significant difference between the study and control groups at baseline data (before intervention) regarding to intensity of pain ($P= 0.58$). As well, the result indicated that there was no significant difference between the study and control groups at 3rd day after the intervention. In spite of the previous state of significance, the study group achieved low pain intensity (5.27 ± 1.67 & 5.43 ± 1.68 respectively). This may be

due to the same previous mentioned rational, the 3rd day is near time after delivery so the mother still have pain from suture and can't contract her muscles efficiently according to the predetermined time.

This previous result agree with (Albers and Borders, 2013), who studied the factors affecting the healing of episiotomy; the results revealed that Kegel exercises performed postnatally were found to decrease the pain of episiotomy after 72 hours.

On the other hand, there were highly statistically significant differences between both groups regarding mean pain score at 8th and 14th day after intervention (P= 0.01 & 0.00 respectively). According to this study result, the postnatal mothers in the study group had a less mean score of perineal pain than in the control group. This may be due to that the Kegel exercises create flexibility in the perineal area tissue, which helps in resolving the edema in the perineal area and might help relieve pain or tenderness due to scarring.

This result is in the same context with (Oya and Sevgul, 2015), who studied the effects of postnatal Kegel exercises on the integrity of prenatal perineum, the result showed that prenatal kegel exercises lead to reduce the perineal pain in exercising women than in the non-exercising once with a highly statistically significant difference (P<0.001) at the point of 7 days after episiotomy. In addition, this finding was supported by (Fleten and Nystad, 2012), who examined the effect of postnatal pelvic floor muscle training on episiotomy pain and wound healing, the result reported that, women who performed pelvic floor muscle training in postpartum period, had less experience pain and faster healing for episiotomy incision than who did not. Another study by Sung et al, (2013) reported that, the Kegel exercises in postpartum period resulted in that 40% of women were still experiencing perineal pain in postnatal first 4 days, 20% in 1st week and 9% in 2nd week.

However the previous result contradicted with that of (Chiarelli & Cockburn, 2012), who found that the difference could not be found between groups exercising Kegel and another group not in terms of perineal pain.

VI. Conclusion

Practicing postnatal Kegel exercises had a significant effect on decreasing perineal pain and accelerating healing of the perineal incision after episiotomy.

VII. Recommendations

Based on the findings of the present study, the researchers suggested the following recommendations:

- Integrating the Kegel exercises as a main part of postnatal instructions for the women for its important role in improving the quality of life of women in postnatal period.
- Future research to be replicated on randomized clinical trials on larger sample size and different techniques for generalization of results.

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