

Effects of Prenatal Perineal Massage and Kegel Exercise on the Episiotomy Rate

Hala Abd El fttah Ali

Lecturer of Women's Health and Obstetrics Nursing, Faculty of Nursing Kafr El Sheikh University

Abstract:

Aim: This study aimed to assess the effects of prenatal Perineal Massage and Kegel exercise on the episiotomy rate.

Subjects and Methods: Randomize controlled trial was carried out at Antenatal Outpatient Clinic and Labour and Delivery Ward at El Mansoura University Hospital, Egypt. This study comprised a random study sample of 180 pregnant mothers out of randomized 225 was recruited for this study according to certain criteria who were between 18 and 35 years of age, 35 gestational weeks, expected to vaginal delivery. They were randomly assigned to three groups; Perineal Massage (50 women), Kegel exercise (60 women) and control (70 women). Four tools were used for data collection: Data Collection Form included REEDA Scale, Kegel Exercise Training Hand Out, Prenatal Perineal Massage Learning Guide, Labour and Follow up Assessment Sheet were used.

Results: The study results revealed that, episiotomy was applied to 20%, 36.7% and 42.8% of pregnant women in massage, exercise and control groups respectively and a statistically differences were found between groups ($p = 0.031$). Massage group was statistically significant lesser in terms of episiotomy, laceration and degree of laceration. As well as Massage group was statistically significant less in terms of postnatal 24 hours and 15 days perineal pain.

Conclusion: Massage and Kegel exercise groups were statistically significant less in terms of episiotomy, laceration and degree of laceration. As well as postnatal 24 hours and 15 days perineal pain.

Recommendations: Health education program about Perineal Massage as well as Kegel exercise for pregnant women should be implemented and supported by health professionals to relieve episiotomy and perineal traumas.

Keywords: Perineal Massage, Kegel exercise and episiotomy.

I. Introduction

Childbirth and all interventions performed during childbirth with their effects are important experiences that make differences in the quality of life of the women and their families [1-7]. However, as a result of auspicious efforts and researches that will make vaginal delivery safer and more qualified, a number of unnecessary interventions that are not appropriate, practiced inconveniently or do not help normal childbirth are being practiced [3].

Besides, these not important interventions performed may cause perineal traumas that will accompany pre-and-post short and long term illness and may influence women's physical, psychological and social welfare [2,7-11]. Besides, the perineal pain experienced as a result of birth lacerations may affect family functions and life activities [4, 6-7,12]. Therefore, important changes have occurred in vaginal delivery practices in last 30 years. Today, the place and the importance of many interventions that are performed during childbirth routinely are being questioned again in a manner based on evidence [6,7, 13,14].

Generally, the episiotomy that increases women's risks for being liable to perineal trauma has become an intervention being used widespread today. Episiotomy is practiced during 50% - 90% of childbirths. In recent years, the number of researches stating that episiotomy should be limited is increasing [4,6,13,15-17]. For many years a number of researches have been carried out on techniques and practices that will alleviate these painful and troublesome situations during childbirth [18-21].

Several earlier studies have indicated that, today, the investigations stating that antenatal Perineal Massage has great effects on protecting the integrity of perineum and reducing the number and severity of lacerations who are becoming widespread. Performing effective Kegel exercises strengthens pelvic floor muscles. Muscle exercise involves gradually increasing the number and intensity of pelvic floor contractions. Women with muscle exercise should be taught to squeeze the anal sphincter, as if to try to stop passing flatus. This technique is effective because the pelvic musculature is located around the perineum extending below the anal sphincter. This helps avoid tears and episiotomy during birth, and aids body recover better after the childbirth [22-25].

As regards Perineal Massage a method of preparing the birth passage outlet, particularly the perineum, for the stretching and pressure sensations during the birth who has been used in different countries and cultures throughout much of human history to avoid trauma to that area; either tears or an episiotomy. A large study has shown that women experiencing their first vaginal childbirth, who practice Perineal Massage from 35 weeks of pregnancy have a lower risk of serious tearing (requiring stitches) or episiotomy. The women will become more aware of perineal area with Perineal Massage who will assist her to relax and open up for her baby's birth. Women do not report the extremes of stinging and burning that often accompany the birth of their baby's head that have consistently performed Perineal Massage. Furthermore, Perineal Massage also decreases the probability of ongoing perineal pain at three months post-delivery. It is recommended that antenatal Perineal Massage started from 35 weeks of pregnancy and it's benefit is seen when practiced just once or twice a week. The protective effect of Perineal Massage may decrease if it performing more frequently than this recommendation [22-25].

Care to women and their newborns during the ante partum, intrapartum, postpartum, and neonatal stages of this important life event have performing by registered nurses. They assess each mother and baby and develop an individualized plan of care (26). The deliver woman could bond well with her newborn and that the majority had intact perineum. She should have been taught performing Perineal Massage by midwife with good results and with an intact perineum[27]. The process of helping women learn to contract their pelvic muscles is term neuromuscular reeducation. The maneuver of a rapid, intentional contraction of pelvic muscles and deep breaths while contracting floor muscles rapidly three to five times, also known as "quick flicks" should have been taught by midwife [28].

Significance of the study

World Health Organization and UNICEF estimates indicate that most of the total 529,000 maternal deaths globally occur in just 13 countries associated with complication of normal childbirth such as episiotomy and perineal traumas. By contrast, information on the global burden of non-fatal health outcomes remains patchy and incomplete [1,28].

In Egypt, maternal mortality related to complications of childbirth such as episiotomy and perineal traumas, 126 maternal death per 100,000 women aged 15-49 years compared in Sweden which was 22 per 100,000/year[1]. Each year more than approximately 600,000 women die due to complications related to childbirth. Vast majority of them has been determined to occur in underdeveloped countries. Antenatal, perinatal and postnatal care is among the fundamental protective services for protection and improvement of the health of both mother and the newborn to be delivered[2].

Research hypothesis

To fulfill the aim of this study, research hypothesis was tested: Parturient women who are experienced a prenatal Perineal Massage and Kegel exercise report lower need for episiotomy.

II. Subjects and methods

1.2 Aim of the study

This study aimed to assess the effects of prenatal Perineal Massage and Kegel exercise on the episiotomy rate.

2.2 Study design

Randomize controlled trial.

2.3 Setting

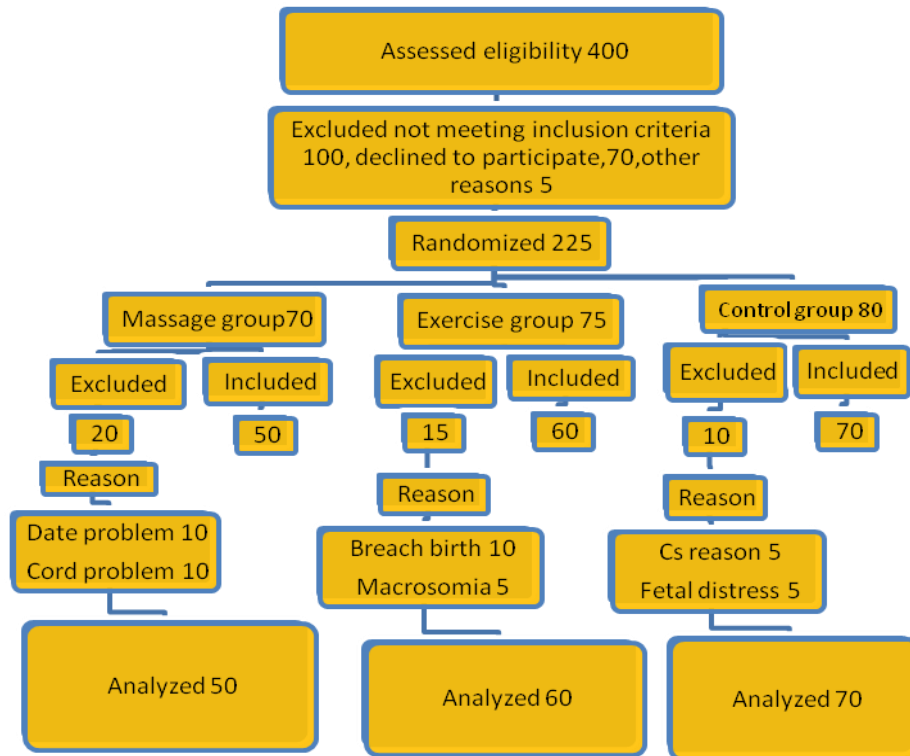
Antenatal Outpatient Clinic and Labour and Delivery Ward at El Mansoura University Hospital, Egypt. For the first author, the current research data collection did not take place at Kafr El Sheikh City because her residence place at Mansoura City and there was not a University Hospital there.

2.4 Sampling

A systematic random sample was used to recruit participants in this research who assigned during the period from 1st of March 2015 to the end of July 2015. A study sample of 180 pregnant women out of 225 randomized women that were randomly assigned to three groups; each group was further divided and randomly allocated into one of three groups, Massage group(50 women) which applied Perineal Massage, Kegel exercise group(60 women) which applied Kegel exercise and control group(70 women) not giving any. A total sample size of 180 patients are required to have a 90% chance of detecting, as significant at the 5% level, an increase in the episiotomy rate from 20% in experimental group to 42.8% in the control group. Calculation of sample size based on the following formula:

$n = f(\alpha/2, \beta) \times [p_1 \times (100 - p_1) + p_2 \times (100 - p_2)] / (p_2 - p_1)^2$ Where p_1 and p_2 are the percent 'success' in the control and experimental group respectively, and $f(\alpha, \beta) = [\Phi^{-1}(\alpha) + \Phi^{-1}(\beta)]^2$, Φ^{-1} is the cumulative distribution function of a standardized normal deviate. Hence, 80 participants per treatment arm are required. By assuming that some participants may drop out from the study.

A flow chart of the women's assignment is presented in Frame I.



Frame I. Flow chart of the women's assignment

Inclusion criteria

The women were allocated to intervention groups with:

- Age 18 and 35 years of age
- gestational weeks were 35
- Had at least elementary graduate
- Expected to vaginal delivery
- Willing to participate into study
- Willing to make normal delivery
- Come to hospital at least once a week
- Accepted to touch their genital areas included in the study

While pregnancy risk and any known cesarean indication excluded from the study.

2.5 Tools of data collection

2.5.1 The Data Collection Form

The data collection form developed by researcher (in which certain peri-and postnatal variables were questioned) consisted of 30 questions involving pregnant women's sociodemographic features such as age and education. In addition, a REEDA Scale took place in the data collection form. It was reviewed by supervisors in the field of maternity nursing and it was implemented by researcher.

REEDA Scale

It was developed by Davidson in 1979 to reach objective results in postnatal assessment of perineum. The validity and reliability study of the scale was completed by Hill in 1989 and Ustunsoz 1996. Scale is comprised of 5 parameters of wound healing as redness, edema, ecchymosis, discharge and approximation. It was reviewed by supervisors in the field of maternity nursing and it was implemented by researcher. Scale was evaluated by giving 0, 1, 2 and 3 score to each assessment. The lowest score was 0 and the highest score is 15.

The highest score indicates the most serious perineal trauma [32-33] as in the following Frame 2.

Points	Redness	Oedema	Ecchymosis	Discharge	Approximation
0	None	None	None	None	Close
1	Within 0.25cm of the incision bilaterally	Perineam less than 1 cm from incision	Within 0.25cm of the incision bilaterally or 0.5 cm unilateral	Serum	Skin separation 3 mm or less
2	Within 0.5cm of the incision bilaterally	Perineam and or between than 1-2 cm from incision	Between 0.25cm to 1 cm bilaterally or between 0.5-2 cm unilateral	Serosanguineous	Skin and subcutaneous fat separation
3	Within 0.5cm of the incision bilaterally	Perineam and or vulvar greater than 2 cm from incision	Greater than 1 cm bilaterally or 2 cm unilateral	Bloody purulent	Skin and subcutaneous fat and facial layer separation

Frame 2. REEDA Scale

2.5.2 Antenatal Perineal Massage Learning Guide

It was reviewed by supervisors in the field of maternity nursing and it was implemented by researcher.

Preparing and technique for Perineal Massage as following:

- Emptying the bladder
- Wash hands, and find a relaxing place to perform the massage (bathroom)
- A warm bath or warm compresses on the perineum for 10 minutes prior to the massage may help with relaxation
- Sit/position comfortably
- Use a mirror to become thoroughly familiar with the vaginal opening and the perineum
- A water-soluble was put in lubricant or natural oil like olive oil on the thumbs and the perineum
- The thumbs placed just inside the vagina to a depth of three to five centimeters
- Gently press downward towards the rectum and to the sides of the vagina at the same time to stretch the opening, until a very slight burning, stinging, or tingling sensation was felt
- Work the lubricant in slowly and gently maintaining the pressure and the perineum was pulling forward a little as sweep thumbs from side to side of the vagina in a “U” shaped motion for approximately two minutes
- The massage can be done in one direction at a time i.e. from side to side or the thumbs can be swept in opposite directions. Try different ways until which was more comfortable was found.
- Focus on relaxed breathing whilst trying to consciously relax the pelvic floor muscles and allowing the tissues to stretch
- Relax and repeat once/week [29, 30].

2.5.3 The Kegel Exercise Training Handout

The training brochure was developed by researcher consistent with literature for the pregnant women in exercise group consisted of a handout describing them how to perform Kegel exercise. It was reviewed by supervisors in the field of maternity nursing and it was taught by researcher and implemented by women. Kegel exercises were taught to exercise group so that the women were use base pelvic muscles and they performed this exercise once next to researcher.

In order to teach exercise, the pregnant women were told to contract the muscles in the base of pelvis by inserting two fingers into vagina and to try to constrict vagina. During this contraction time, women were made aware of her muscles. Pregnant women were told to continue contracting it for about 3 seconds and then to loosening it for 3 seconds. Subjects were asked to perform this exercise at home at least 5 - 10 times /day until childbirth[31]. Besides the training handout, the application follow up form which was developed by researcher and it was handed out to pregnant women.

Application Follow-up Form

Table was used for registration their exercises with the duration and frequency.

2.5.4 Labour and follow up assessment sheet

To assess labor progress and maternal outcomes such as episiotomy, laceration and perineal pain after 24 hours and 15 day, wound healing after 24 hours and 15 day. It was reviewed by supervisors in the field of maternity nursing and it was implemented by researcher.

2.6 Validity and reliability

Tools content validity ascertained by a panel of 3 experts in the field of maternity nursing and the looked-for modifications were carried out.

2.7 Ethical consideration

Permission to carry out the study was obtained from the supervisor of Maternity and Gynecology of Nursing Department, the Director of El Mansoura University Hospital, the Head of Obstetrics and Gynecology Department. The researcher introduced herself to all health care providers & parturient women and the aim of the study was explained prior their participation to obtain their acceptance & cooperation as well as their written consent.

2.8 Pilot study

Pilot study was conducted on 10% of total sample. It aimed to assess the required time for each group to perform the task and to assess clarity, feasibility and applicability of the tools. The results of the pilot indicated that the task needs 20 to 30 minutes to be completed and statements of the tools are clear and applicable. The pilot sample was excluded from the study.

2.9 Procedure of data collection

Study groups were selected with informed consent. A study population outcome was compared with consisting of women by maternal age and gestational weeks (35 weeks of gestation). The researcher introduced herself to eligible women and briefly explained the nature of the study, then written consent was obtained from them, written approval to perform REEDA Scale was obtained. In arrangement of study groups, a systematic randomization method was used. The Antenatal Clinic has been visited three days a week (Thursday, Friday and Saturday) for 4hr daily to select these pregnant women. The interview took from 20 to 30 minutes with each woman in intervention group, pregnant women experiencing their first or second pregnancy were interviewed. Pregnant women were told to be followed up until delivery. They were randomized into massage, exercise and control groups based on the day they referred to outpatient. The massage, exercise and control groups were selected at the first, second and third days of the week respectively.

A study sample of 180 pregnant women out of 225 randomized women that were randomly assigned to three groups; each group was further divided and randomly allocated into one of three groups, Massage group(50 women) which applied Perineal Massage, Kegel exercise group(60 women) which applied Kegel exercise and control group(70 women) not giving any. Randomization of pregnant women into massage, exercise and control groups was continued at other workdays. The massage group was selected at massage day, exercise group at exercise day and control group at control day. So, selection of other groups was not performed during one group's selection day. The pregnant women participated into study were not aware of the group they were selected for, therefore they had no idea about the method applied. However, researchers knew the volunteers selected for trial and control groups, as well as what methods were applied to them, specific issues addressed and documented included: The data collection form which involving pregnant women's sociodemographic features. REEDA Scale was obtained.

The researcher and nurses were providing care to women during the ante partum, intrapartum, postpartum. They assess each mother and her baby and develop an individualized plan of care. Perineal Massage was applied to massage group at the clinic by the researcher, information related to the importance of the massage was stated to massage group by the researcher and pregnant women were told to preparing them for Perineal Massage, Kegel exercise were taught to exercise group and applied by the women, handout and table for registration their exercises where used. Women were asked to register the exercises performed daily on the application follow up form with the duration and frequency. The women in exercise group were checked out whether they have performed exercises when they came to control each week or through telephone calls. And then, labor and follow up assessment sheet was used to assess progress of labour and maternal outcomes such as episiotomy, laceration, perineal pain after 24 hours and 15 day and wound healing after 24 hours and 15 day.

Control group

The woman in control group received routine antenatal care without giving Kegel or Perineal Massage exercises.

2.10 The outcome measures

Primary; episiotomy rates, secondary; laceration, postnatal 24 hours and 15 days perineal pain and improvement.

2.11 Limitation of the study

Subjects were experiencing difficulties with carrying out antenatal Perineal Massage and Kegel exercise because there were differences in knowledge and skills, since the hospital where research was carried out was a training hospital and because duration of research was short.

2.12 Data analysis: Analysis of the data obtained from research was performed with SPSS 15.0 package program. While the data of study evaluated the frequency, percentage, number and average. Standard deviation and minimum-maximum were used. For homogeneity test between study and control groups during comparison made between demographic variables and other qualitative and quantitative data, the Chi-square, F value, ANOVA tests were used. In addition, a power analysis was performed to determine the number of sample and to demonstrate the strength of the research. Results were evaluated at 95% confidence interval and at $p < 0.05$ significance level. To determine the sample that would constitute necessary massage, exercise and control groups for research.

III. Results

Table I showed that any statistically significant difference could not be found between study and control groups related to education and variables concerning the period of pregnancy but, statistically significant difference was found between study and control groups in terms of mean age ($p < 0.001$).

Table II presented that as regard the mean gestational weeks of pregnant women in massage, exercise and control groups which were 38.16 ± 3.06 , 37.18 ± 2.34 and 39.65 ± 3.16 respectively; whereas statistically significant difference was found between them ($p < 0.001$). Any statistically significant difference could not be found between massage, exercise and control groups of pregnant women in terms of epidural anesthesia ($p = 0.819$), crede maneuver ($p = 0.316$), forceps/vacuum ($p = 0.204$) and induction application status ($p = 0.484$). Although any statistically significant difference was not found between infants' weight ($p = 0.002$), Massage group was statistically significant higher in terms of mean 1minute Apgar scores and 5-minute Apgar scores than other groups ($p < 0.001$), while massage group was statistically significant lesser in terms of mean duration of second stage of labour than other groups ($p = 0.035$).

Table III was found that episiotomy was applied to 20%, 36.7% and 42.8% of pregnant women in massage, exercise and control groups respectively and a statistically difference was found ($p = 0.031$). While laceration occurred in 42%, 53.3% and 70% of pregnant women in massage, exercise and control groups respectively as well as statistically significant difference was found between groups related to degree of laceration ($p < 0.001$). In addition, massage group was statistically significant lesser related to packs $p = 0.031$. Massage group was statistically significant lesser in terms of episiotomy, laceration and degree of laceration.

Figure I was illustrated that Massage group was lesser related to episiotomy rate.

Table V displayed that Massage group was statistically significant less in terms of perineal pain and wound healing 24 hours and 15 days after childbirth than other groups ($p < 0.001$).

Variables	Massage Groups (n = 50)	Exercise Groups (n = 60)	Control Groups (n = 70)	X ²	P
Sociodemographic characteristics					
Age (year), mean ± SD	25.91 ± 3.65	27.03 ± 6.15	23.26 ± 5.16	8.677*	<0.001
Primary/secondary school graduates (8 years), n (%)	(60)30	(33.3)20	(57.1)40	10.095	0.006
High school/university graduates, n (%)	(40) 20	40 (66.7)	30 (42.8)		
Variables concerning the period of pregnancy					
Gravidity <2, n (%)	26 (52)	17 (28.3)	28 (40)	6.41	0.041
Abortion, n (%)	2 (4)	0 (0)	1 (1.4)	2.702	0.259
Frequent of prenatal care, n (%)					
4 - 6 times	26 (52)	35 (58.3)	25 (35.7)	7.119	0.028
More than 6	24 (48)	25 (41.7)	45 (64.3)		

* F value, ANOVA test

Variables	Massage Groups (n = 50)	Exercise Groups (n = 60)	Control Groups (n = 70)	X ²	P
Maternal characteristics and intervention variables during labor					
Gestation week, mean ± SD	38.16 ± 3.06	37.18 ± 2.34	39.65 ± 3.16	12.254*	<0.001
Application of epidural anesthesia, n (%)	2 (4)	3 (5)	2 (2.8)	0.399	0.819
Application of crede maneuver, n (%)	7 (14)	10 (16.7)	17 (24.2)	2.304	0.316
Application of forceps/vacuum, n (%)	0 (0)	0 (0)	2 (2.8)	3.178	0.204
Application of induction, n(%)	0 (0)	1 (1.7)	2 (53.8)	1.453	0.484
Mean duration of the second stage (min), mean ± SD	255.7 ± 158.1	299.9 ± 214	362.4 ± 268.7	3.428*	0.035
Newborn characteristics					
Neonatal weight (kg), mean ± SD	3137 ± 400.24	3014.42 ± 330.85	3275.24 ± 483.36	6.424*	0.002
1. minute Apgar score, mean ± SD	6.90 ± 0.450	5.48 ± 0.439	4.11 ± 1.115	22.552*	<0.001
5. minute Apgar score, mean ± SD	9.35 ± 0.97	8.12 ± 0.96	7.79 ± 1.95	194.236*	<0.001

* F value, ANOVA test

Table III. Perineal outcomes between the study and control groups (n = 180).

Perineal outcomes	Massage Groups (n = 50)	Exercise Groups (n = 60)	Control Groups (n = 70)	X ²	P
Episiotomy, n (%)	10 (20%)	22 (36.7%)	30 (42.8%)	6.945	0.031
Laceration, n (%)	21 (42%)	32 (53.3%)	49 (70%)	9.719	0.008
Degree of laceration, n (%)					
1 degree	15 (71.4%)	10 (31.3%)	11 (22.4%)	30.259	<0.001**
2 degree	5 (23.8%)	12 (37.5%)	11 (22.4%)		
3 degree	1 (4.8%)	10 (31.3%)	14 (28.6%)		
4 degree	0 (0%)	0 (0%)	13 (26.5%)		
Mean number of packs of suture Material (90 cm), n(%)					
None	9 (42.9%)	11 (34.3%)	14 (28.6%)	10.598	0.031
1 pack	10 (47.6%)	16 (50%)	15 (30.6%)		
2 packs	2 (9.5%)	5 (15.6%)	20 (40.8%)		
3packs and more	0	0	0		

**p < 0.001

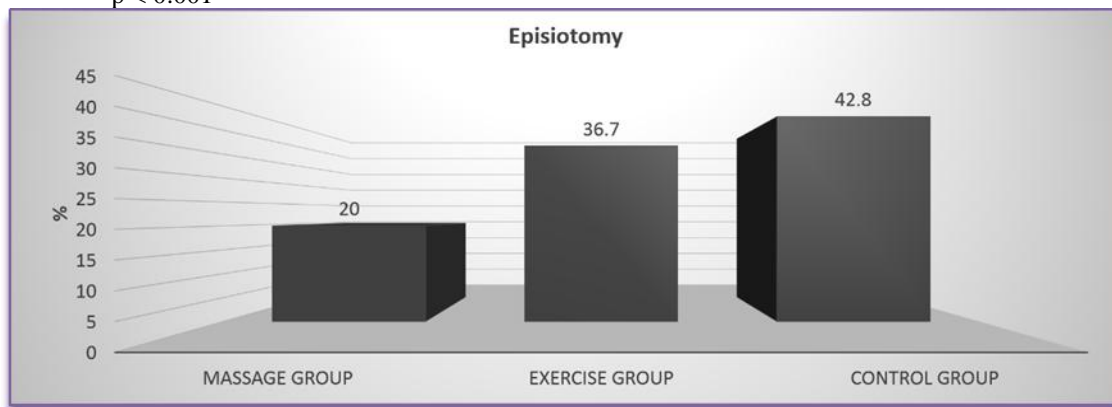


Figure I. Episiotomy rate between the study and control groups (n = 180).

Table V. Perineal outcomes twenty-four hours and fifteen days after delivery (n= 180).

Variables	Massage Groups (n = 50)	Exercise Groups (n = 60)	Control Groups (n = 70)	ANOVA test	
				F	P
Perineal pain after 24 hours, mean ± SD	2.33 ± 2.17	5.59 ± 2.58	6.89 ± 2.64	50.765	<0.001**
Perineal pain after 15 days, mean ± SD	0.52 ± 1.27	2.85 ± 1.87	2.75 ± 1.18	44.589	<0.001**
The wound healing of after 24 hours (REEDA Scale), mean ± SD	3.70 ± 1.65	4.59 ± 1.09	6.41 ± 1.44	58.667	<0.001**
The wound healing of after 15 days (REEDA Scale), mean ± SD	1.93 ± 1.15	2.35 ± 1.55	3.40 ± 1.80	14.165	<0.001**

*p < 0.05 **p < 0.001

IV. Discussion

This study aimed to assess the effects of prenatal Perineal Massage and Kegel exercise on the episiotomy rate. To fulfill the aim of this study, research hypothesis was tested: These study findings revealed that parturient women who are experienced a prenatal Perineal Massage and Kegel exercise report lower need for episiotomy. Accordingly, the study hypothesis was accepted. These study findings were consistent with prior research studies which reported that the investigations showed that antenatal Perineal Massage and effective Kegel exercises had positive effects on protecting the integrity of perineum and reducing the episiotomy rate and number, severity of lacerations, performing strengthens pelvic floor muscles[1-2, 22, 34-35].

Hence, according to the present study the induction of labour was not utilized in massage group, however, it was utilized in Kegel exercise and control groups at higher rates. As regard previous observational study by Eogan et al. [2006], carried in Ireland recruited two cohorts of women. Of 179 women recruited, 34 weeks gestation reported that, while childbirth started spontaneously with low epidural anesthesia and forceps or crede maneuver in massage group, the rate of need for induction was found higher in the group performing exercise[35]. In addition, a case-control study in Ireland, consisted of one hundred primiparous women, 54 in study,46 in control group was found the birth rate starting spontaneously higher in control group [34,36,37].

The previous studies were parallel with the present study. Another prospective follow-up study carried out in Turkey with a three hundred ninety-six primipar as women were included in the study by convenience sampling[6]. In addition, Karacam et al. [2012] reported that the induction rate, epidural anesthesia and forceps or crede maneuver in the group that received antenatal perineal massage were found differences when compared

with control group. The discrepancies between two groups were found statistically significant [7]. The previous study was conversely, and in disagreement with the present study. This discrepancy might be explained by the small sample size of the present study.

Concerning the current study, a statistically difference was found in the second stage mean duration $p=0.035$ which did not support the observational study based on data from, a clinical trial conducted with 54 randomly selected women carried out in Brazil reported that a statistically difference was not found between the groups related to duration of second stage of labour [33]. As well as the present study in contrast with a randomized controlled trial which was carried out in Turkey with 101 pregnant women who completed 33 gestational weeks. In two studies a statistically significant difference was not found between exercise and control groups in duration of the second stage of childbirth [12, 25]. While the current study at the same line with Salvesen and Morkvedn (2004) in a randomized controlled trial carried out on three hundred and one Norwegian healthy nulliparous women randomly allocated to a training group of one hundred and forty eight or a control group of one hundred and fifty three women found prolongation of the second stage of delivery were low in exercise groups [38].

Considering the current study, it was found that massage group had higher statistically significant in terms of mean 1 minute and 5-minute Apgar scores than other groups as well as neonatal weight which in disagreement with previous study which stated that any statistically significant difference was not found between study groups related to infants' weight, mean 1 minute Apgar scores and 5-minute Apgar scores [6-7].

According to the current study, it was found that the episiotomy application rate to massage and exercise groups was low compared to control group ($p = 0.031$) which was not at the same line with another randomized controlled trial which reported that there was not any relationship between antenatal perineal application and episiotomy rates [2, 6, 23, 39]. While the present study supported other quasi experimental study carried out on two hundred Turkish pregnant women who experienced vaginal delivery which stated that antenatal Perineal Massage application had a significant effect in reducing the episiotomy rate [11, 40].

The foregoing present study reported that the laceration formation rate during childbirth was determined lower in massage and exercise groups than in control group. A descriptive study, which studied 2,695 Spanish women who gave birth twice, research suggesting that the antenatal Perineal Massage had a reduction of the number and severity of lacerations [5, 10, 15, 19, 21-23]. In addition, a study applied by Bolandhemmat et al. (2001) the incidence of perineal laceration was found low in Perineal Massage group and was high in control group [37]. Another study reported that the rate of laceration in perineum was found low in antenatal preneal massage group [33, 41, 42]. The previous studies were in agreement with the present study. In two previous studies any statistically significant difference could not be found between the group which received Perineal Massage and another group that did not receive it [6, 21].

Furthermore, in a randomized controlled study carried on Australian 1340 women, 36 weeks' gestation, antenatal Kegel exercises were performed, any statistically significant difference could not be found in terms of reduce of laceration incidence by Kegel exercise [8, 12, 25, 26, 43]. The present study was not in accordance with the previous studies that may explained by cooperation from studied women in carrying exercises. In the present study laceration degree was found lower in massage and exercise groups than in control group. The first degree of laceration rate was found low in massaging group. In some studies although the first and second degree laceration rates were found almost similar in massage and not massage groups, however, the third and fourth degree laceration rates were lesser in control group [11, 37]. In another study, the first degree of laceration rate was found lower in massage group [10].

As regard present study, the current findings in discrepancies with the previous studies. However, in two studies, the first degree laceration rate was found higher in massage group [5, 6]. The present study in accordance with the previous study. In the present study the amount of suture material used for perineal trauma was found lower in massage and exercise groups than in control group with highly significant between groups. The current study was not encouraged by another study which stated that any statistically significant difference could not be found between massage and control groups in terms of amount of suture material used in perineal trauma [10]. However, in another study this difference was found statistically significant [6, 8]. This was in agreement with the current study.

The current study showed that antenatal massages and exercises were found to reduce perineal pain experienced 24 hours and 15 days after delivery. The present study at the same line with observational study and a clinical study conducted with 54 women randomly in Brazil which reported that Perineal Massage had reduced the perineal pain in postnatal period [23, 33, 39]. While the present study was in disagreement with a single-blind, randomized and controlled study with Canadian pregnant women without a previous vaginal birth carried out by Labrecque et al. (2000) which reported that, a difference could not be found between massage and not massage groups in terms of perineal pain [42, 44].

According to the present study the massage and exercise performed antenatally were found to accelerate healing of wound after 24 hours and 15 days after delivery (Reeda Scale) which was not at the same

line with another study which reported that the difference between groups that received massage and did not receive was not found statistically significant in terms of healing of perineal wound 24 hours and three weeks after delivery [6]. Other studies were in agreement with the current study which reported that healing of episiotomy wound would be faster in exercising women [26,43].

V. Conclusion

Based on the results revealed by the present study, it can be concluded that a statistically significant difference was found between studies and control group related to 24 hours and 15 days after delivery. According to the results of research, the application of episiotomy was reduced by antenatal Perineal Massage that significantly affect the perineal trauma, postnatal perineal pain and healing. In line with these findings, the prenatal Perineal Massage and Kegel exercise were reduce episiotomy rate and perineal lacerations in the postnatal period, as well as were accelerate healing during postnatal period.

VI. Recommendations

The following recommendations could be inferred from the study findings. Health education program about Perineal Massage as well as Kegel exercise for pregnant women should be implemented by health professional team to relieve episiotomy and perineal traumas. Perineal Massage and Kegel exercise practiced during 35 weeks of gestation should be supported by health professional team because they may play an important role in improving the quality of life for women in both prenatal and postnatal periods.

References

- [1]. A Carla, bouzahr, Br and Med Bull. Pregnancy: Reducing maternal death and disability. 67 (1):2003; 1-11.
- [2]. F.D Sayiner and Demirci, N. Prenatal Perineal Massage (Effectiveness of Prenatal Perineal Massage in Vaginal Delivery). Florence Nightingale Hemsirelik Dergisi. 15(3):2007;146-154.
- [3]. L.L. Albers and Borders N. Minimizing Genital Tract Trauma and Related Pain Following Spontaneous Vaginal Birth. Journal of Midwifery & Women's Health. 52(2):2007;246-253.
- [4]. M Geranmayeh, Habibabadi Z.R, Fallahkish B, Mahdi, Azizabadi, Farahani M.A, Zohreh, Khakbazan Z, Abbas Mehran A. Reducing Perineal Trauma through Perineal Massage in Second Stage of Labor. Archives of Gynecology and Obstetrics. 2012;285, 77-81.
- [5]. S Manzanares, Cobo D, Moreno, Martinez M.D, Sanchez, Gila M, Pineda A. Risk of Episiotomy and Perineal Lacerations Recurring after First Delivery Birth. 2013; 40.
- [6]. Z Karacam, Ekmen E, Caisir H. The Use of Perineal Massage in the Second Stage of Labor and Follow-Up of Postpartum Perineal Outcomes. Health Care For Women International. 33(3): 2012;697-718.
- [7]. Z Karacam, and Eroglu K. Effects of Episiotomy on Bonding and Mother's Health. Journal of Advanced Nursing. 43 (3):2003;1365-2648,384-394.
- [8]. R Johanson. Perineal Massage for Prevention of Perineal Trauma in Childbirth. The Lancet, 355:2000;250-251.
- [9]. E Meidan, Walfisch A, Raz I, Levy A, Hallak M. Perineal Massage during Pregnancy: A Prospective Controlled Trial. The Israel Medical Association Journal (IMAJ). 12(10):2008;499-502.
- [10]. G Stamp, Kruzins G, Crowther K. Perineal Massage in Labour and Prevention of Perineal Trauma: Randomized Controlled Trial. BMJ. 322 (4):2001;1277-1280.
- [11]. AAEI Hamid, Azzam H.F, Ismail G.M, Gaafar H.M. Effect of a Structured Antenatal Kegel Exercises Protocol on Labor Progress among Women Attending Antenatal Clinics. Egyptian Nursing Journal. 12(3):2012;2090-2106.
- [12]. A Durmaz, and Bugdayci R. Factors Affecting the Healing of Episiotomy. Journal of Public Health. 13(11): 2013; 72-85.
- [13]. I Gungor, Yildirim, Rathfisch G. Evidence Based Practices in the Second and Third Stage of Normal Labour. Hemsirelikte Arasturma Gelistirme Dergisi. 54(2):2009;56-65 .
- [14]. V Berghella, Baxter J.K, Chauhan S.P. Evidence-Based Labor and Delivery Management. American Journal of Obstetrics & Gynecology. 199 (9):2008;445-454.
- [15]. W Oberaigner, Leitner H, Oberaigner K, Marth C, Pinzger G, Concin H, et al. Migrants and Obstetrics in Austria—Applying a New Questionnaire Shows Differences in Obstetric Care and Outcome. Wiener Klinische Wochenschrift. 125 (2):2013;34-40.
- [16]. XH. Wan, Ding Y, Abbaikeli G, Abudureyimu Z, Lin L, Tuexun M. Epidemiologic Study of the Risk Factors of the Adult Female Urinary Incontinence in Uygur of Kashi in Xinjiang. Chinese Journal of Obstetrics and Gynecology. 48 (3): 2013; 916-919.
- [17]. K Altundag, Kizilirmak A, Kartal B, Baser M. The Effect of Perineal Massage in Preventing Perineal Trauma during Vaginal Delivery. Anadolu Hemsirelik ve Saglik Bilimleri Dergisi. 13(12):2010;62-65.
- [18]. O Zare, Pasha H, Faramarzi M. Effect of Perineal Massage on the Incidence of Episiotomy and Perineal Laceration. Health. 23 (6): 2014;10-14.
- [19]. SI. Ismail, and Emery S.J. Patient Awareness and Acceptability of Antenatal Perineal Massage. Journal of Obstetrics and Gynaecology. 33(3):2013;839-843. http
- [20]. F Fahami, Shokoohi Z, Kianpour M. The Effect of Perineal Management Techniques on Labor Complications. Iranian Journal of Nursing and Midwifery Research. 17(12):2012;52-57.
- [21]. J Dame, Neher J, Safranek S. Does Antepartum Perineal Massage Reduce Intrapartum Lacerations? The Journal of Family Practice. 57 (5):2008;480-481.
- [22]. P Jane. Disclosures Urol Nurs. 28(5): 2008;351-356.
- [23]. J Halsam. Pelvic Floor Muscle Exercises. Journal of Nursing Times. 99 (9):2003;54-55.
- [24]. A Lemos, Impieri de Souza A, Gomes Ferreira A.L.C, Figueiroa J.N, Cabral, Filho J.E. Do Perineal Exercises during Pregnancy Prevent the Development of Urinary Incontinence? A Systematic Review. International Journal of Urology. 15 (5):2008;875-880.
- [25]. Association of Women's Health. Obstetric and Neonatal Nurses. 2000;261-2400,728-575.
- [26]. CM. Glazener, Abdalla M, Stroud P, Templeton A, Russell I.T, Naji S. Postnatal Maternal Morbidity: Extent, Causes, Prevention and Treatment. British Journal of Obstetrics and Gynecology. 102 (3):1995;282-287.
- [27]. Daneshgari. Surgical treatment of female stress urinary incontinence, decades learned lessons. European Urology. 58(2):2010;239-241.

- [28]. A M. Guarsi, Pinto, Neto M. J, Osis, et al. Procuraservice medicoin urinary incontinec. *Revistade Ginecologia e Obstetricia*. 23 (7):2001; 439-443.
- [29]. MM. Beckmann, and Stock O. Antenatal Perineal Massage for reducing perineal trauma. *Cochrane Database Systematic Review*. 2013.
- [30]. Queensland Maternity and Neonatal Clinical Guideline. *Perineal Care*, Queensland Government. (2012).
- [31]. Janelle, and Durham. *Doula guide* MSW, CD, ICCE. [Error! Hyperlink reference not valid.](#). 2004.
- [32]. Rev Lat Am Enfermagem. Episiotomy healing assessment: Redness, Oedema, Ecchymosis, Discharge, Approximation (REEDA) scale reliability. *Jan-Feb. 23(1-2): 2015; 162-8.*
- [33]. PD. Hill. Psychometric properties of the REEDA. *J Nurse. Midwifery*. 35(3): 1990;162-165.
- [34]. E Eason, Labrecque M, Wells G, Feldman P. Preventing perineal trauma during childbirth: A systematic review. *Obstetrics and Gynaecology*. Mar. 95 (3):2000;464-71.
- [35]. M Eogan, Daly L, Herlihy C. The Effect of Regular Antenatal Perineal Massage on Postnatal Pain and Anal Sphincter Injury: A Prospective Observational Study. *Journal of Maternal-Fetal and Neonatal Medicine*. *Natal Perineal Massage: A Review of Literature to Determine Instruction, Dosage and Technique*. *Journal of the Association of Chartered Physiotherapists in Women's Health*. 19(11): 2008;8-11,102.
- [36]. M Bolandhemmat, Salari P, Tafazzoli M, Mazloom S.R. The Effect of Perineal Massage during Pregnancy on the Perineal Laceration in Primiparous Women. *Journal of Sabzevar School of Medical Sciences*. 23(8):2001; 60-70.
- [37]. KA. Salvesen, and Morkved S. Randomized Controlled Trial of Pelvic Floor Muscle Training during Pregnancy. *BMJ*. 329 (3):2004;378-380. *A Database of Systematic Reviews*, 1, Article No. CD005123.23.
- [38]. DV. Coonrod, Bay R.C, Kishi G.Y. The Epidemiology of Labor Induction: Arizona. *American Journal of Obstetrics and Gynecology*. 182 (4):2000;1355-1362.
- [39]. Bodner, Adler B, Bodner K, Mayerhofer K. Perineal Massage during Pregnancy in Primiparous Women. *International Journal of Gynecology and Obstetrics*. 78 (8):2002;51-53.
- [40]. MK. Shipman, Boniface D.R, Tefft M.E, Cloghry F. Antenatal Perineal Massage and Subsequent Perineal Outcomes: A Randomized Controlled Trial. *British Journal of Obstetrics and Gynaecology*. 104 (4):1997;787-789.
- [41]. M Avery, and Burket B. Effect of Perineal Massage on the Incidence of Episiotomy and Perineal Laceration in a Nurse Midwifery Service. *Journal of Nurse-Midwifery*. 31 (3):1996;128-134.
- [42]. P Keenan. Benefits of Massage Therapy and Use of a Doula during Labor and Childbirth. *Alternative Therapies in Health And Medicine*. 43(6):2000;66-74.
- [43]. M Labrecque, Eason E, Marcoux S. Randomized Trial of Perineal Massage during Pregnancy: Perineal Symptoms Three Months after Deliver. *American Journal of Obstetrics & Gynecology*. 182 (2):2000;76-80.