Effect of Aloe Vera, Olive Oil and Normal Saline on Episiotomy Pain and Healing among Primi-para Women

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Abstract

Background: Episiotomy is recurrent surgical procedure that facilitates birth vaginally while associated with serious complications which negatively affect aspect of women's life. Thus, **this study aimed** to evaluate the effect of aloe vera, olive oil and normal saline on episiotomy pain and healing among primi-para women. **Subjects and Method: Design:** A comparative experimental study design was applied. **Subjects**: A purposive sample of 90 parturient women who were chosen from obstetric departments of Tanta University and El-Menshawy General Hospitals. **Three tools** used: **Tool (I):** Women's knowledge regarding episiotomy care that consisted of four parts, **Tool (II):** Pain Intensity Visual Analogue Scale (PIVAS) and **Tool (III):** The Standardized REEDA Scale. **Results:** It was proved that episiotomy pain intensity assessed by (PIVAS) highly significantly improved among aloe vera group followed by olive oil group compared to the normal saline group. Also, total REEDA scale shows evident improvement on episiotomy wound healing especially among aloe vera group followed by olive oil group compared to the normal saline group at 5^{th} and 10^{th} days post intervention. **Conclusion**: It can be concluded that applying aloe vera followed by olive oil are highly effective in alleviating episiotomy pain and promote wound healing among primi-para women compared to normal saline solution at 5^{th} and 10^{th} days post intervention. **Accordingly the study recommended** that applying aloe vera followed by olive oil is highly effective on managing episiotomy pain and promoting its healing.

Keywords: Episiotomy, Aloe Vera, Olive Oil, Normal Saline, Primi-para Women.

Introduction

Giving birth is a painful experience in women's life that has a detrimental effect on their physical and psychological health particularly those who were delivered vaginally and had an episiotomy. Postnatal period is considered to be the fourth trimester of pregnancy that most pivotal delicate stage of pregnancy. It described as the period of time following childbirth to the return of a woman's reproductive organs almost to their pre-pregnant state **(Choudhari et al., 2022; Finlayson et al., 2020)**.

During the postpartum period, a number of health issues may emerge, if they are not

addressed in a timely and efficient manner, they may result in poor health status and even death for the mother or her newborn, or both. During the postnatal period, the most common dispute that arises is perineal pain after the spontaneous birth which affects 42% of women and lasts for more than three months. Perineal pain is aggravated subsequent to spontaneous tears, using instrumental delivery or performing an episiotomy **(Roets et al., 2018; Roma et al., 2023)**.

Episiotomy was imported as an obstetrical procedure more than 200 years ago and it was widely used from the start of the 20th century. It is intended surgical incision made in the perineum at the crowning of the presenting part to widen the vaginal opening and facilitate passage of the fetus. Also, it enhances the progress of second stage of labor without maternal or fetal complications. Therefore, episiotomy is considered one of the most commonly practiced obstetrical procedures especially among primiparous women globally **(Aboushady et al., 2023; Baczek et al., 2022; Kalaivani, 2021)**.

Globally the rates of episiotomy ranged from 27% to 54% among primiparous women, also from 30% to 50% of women still have episiotomy in developing nations like Egypt. Nonetheless, the World Health Organization does not justify the routine performance of episiotomy and recommend that the percentage of episiotomy does not exceed 10%. **(El Galada et al., 2024; Mohamed et al., 2024; WHO, 2018).**

There are four types of episiotomy; J-shaped, lateral, midline, and medio-lateral. The most prevalent and well-known type is the medio-lateral due to the fact that it keeps the obstetric anal sphincter safe. While, it has been noted that the midline type is associated with great risk of anal- sphincter injury. Otherwise, J-shaped type is rarely carried out, and the lateral episiotomy becomes disapproved (**Atef et al., 2022; Salvi et al., 2024)**.

Although episiotomy has a variety of advantages such as: reduce posterior perineal damage and third degree of perineal tears, keeping the pelvic floor and perineum muscles relaxed and lower the incidence of fecal and urine incontinence between women postnatally. Conversely, it associated with serious negative effects including pain according to recent study 25% of women continue to experience pain until the end of puerperium, delay wound healing also is a major concern if the woman is not being observed directly this will negatively impact on a life quality for both mothers and their infants **(Kenarsari et al., 2019; Nikpour et al., 2019; Pandya et al., 2023)**.

Healing of episiotomy wound is a complicated process that requires efficient and safe management as the episiotomy site close to the rectum, also the difficulty that women face in reaching this area. Subsequently, a proper attention should be afforded to episiotomy wound care to minimize pain and enhance recovery. So, worldwide there are numerous medical and non-medical interventions that have been developed to alleviate episiotomy pain and promote healing **(Abedian et al., 2020; Hekmatpou et al., 2019)**.

Medical interventions such as; applying of lidocaine, iodine, phenytoin and normal saline, while non-medical interventions

include; applications of honey, saffron, cinnamon, spring flowers, chamomile, lavender, olives and aloe vera. Maternity nurses need to be knowledgeable about the effective episiotomy wound care to help in relieving post-natal women's suffering and promote their episiotomy healing **(Gerosa et al., 2022; Luxey et al., 2024; Talasaz et al., 2022)**.

Many non-medical interventions are recently essential for managing episiotomy pain and promote its healing as they don't associated with systemic side effects like tiredness, irritability, or changes in the composition of breast milk. One of these essential interventions is applying aloe vera that is a transparent jelly-like material which had numerous bioactive ingredients, such as amino acids, carbohydrates, lipids, vitamins, and minerals, as well as enzymes, hormones, a range of medicinal agents like antibiotics, antiseptics and anti-inflammatory agents. These characteristics stimulate fibroblasts and increase blood flow to the wound site. According to the National Institutes of Health, studies have shown that aloe vera help to enhance healing of the skin. **(Eminov et al., 2022; Kaur et al., 2024; Maternity et al., 2022 ; Zahra et al., 2024)**.

In addition, numerous studies have demonstrated the advantages of olive oil, its phenolic compounds, and its unsaturated fatty acids, such as oleic acid, for the healing of wounds. Olive oil has antibacterial, antifungal, and anti-inflammatory qualities which can relieve pain, antioxidants that aid in reducing inflammation, and phenolic chemicals that encourage cell repair. (**Hables 2021; Fili et al., 2024**).

Whereas, normal saline is the most used solution, it is inexpensive, readily available, and effective due to its safety and physiological properties. Additionally, applying normal saline during the first 24 hours after delivery can aid to clear the bacteria, lessen redness and edema, alleviate muscle spasm, and enhance episiotomy healing. Worldwide, recent research findings have shown incompatible results on the best efficient approaches to ease episiotomy pain and boost its healing (**Borah et al., 2022; Gomaa et al., 2019**). Hence, this research was imposed to compare between the effect of aloe Vera, olive oil and normal saline on episiotomy pain and healing among primi-para women.

Aim of the study

It was to evaluate the effect of aloe vera, olive oil and normal saline on episiotomy pain and healing among primi-para women.

Research Hypothesis:

-Primi-para women who will apply aloe vera will be expected to experience lesser episiotomy pain and effective healing.

-Primi-para women who will apply olive oil will be expected to experience lesser episiotomy pain and effective healing.

-Primi-para women who will use normal saline will be expected to experience lesser episiotomy pain and effective healing.

Subjects and Method

Research design:

A comparative experimental research design was utilized to conduct this study.

Setting:

The study was conducted at postnatal units in obstetric departments of the following settings: Tanta University Hospital associated to the Ministry of Higher

Education and Scientific Research: the obstetric department located on the second floor and consisted of two post-natal units each unit consisted of twelve beds. El-Menshawy General Hospital associated to the Ministry of Health and Population where the obstetric department located in the third floor and consisted of two post-natal units each unit consisted of six beds.

Subjects:

Ninety parturient women were chosen through a purposive sample from the lastly specified settings based on the number of primi-para women who had episiotomy within the last six months attending at each setting:

Name of the Health Setting	Average number of primi-para women who had episiotomy within the last 6 months	Number of selected sample
Tanta University Hospital	140	50
El-Menshawy General Hospital	110	40
Total	250	90

The research sample was chosen based on the subsequent inclusion criteria:

Primi-para women, at the first 4-6 hours after delivery, had normal vaginal birth with an episiotomy accompanied by pain, hadn't used any drugs to relieve pain, hadn't any medical disorders especially diabetes mellitus and anemia that affect wound healing and willing to participate in the study.

Sample calculation:

Size of the sample and power analysis was calculated using Epi-Info 7 software statistical package created by World Health Organization and centres for Disease Control and Prevention, Atlanta, Georgia, USA version 2020. The size of sample was calculated according to the subsequent formula:

1. $n = z^2 * p * (1 - p) / e^2$

2. n (with finite population correction) = $[z^2 * p * (1 - p) / e^2] / [1 + (z^2 * p * (1 - p) / (e^2 * N))]$

Where: n is the sample size, z is the z-score allied with a level of confidence, p is the sample proportion, recorded as a decimal, size of the sample (n) is calculated using the subsequent formula: $n = [z^2 * p * (1 - p) / e^2] / [1 + (z^2 * p * (1 - p) / (e^2 * N))]$ Where: z = 1.96 for a confidence level (α) of 95%, p = proportion (expressed as a decimal), N = population size, e = margin of error. z = 1.96, p = 0.1, N = 250, e = 0.05 $n = [1.96^2 * 0.1 * (1 - 0.1) / 0.05^2] / [1 + (1.96^2 * 0.1 * (1 - 0.1) / (0.05^2 * 250))]$ Size of the sample (with finite population correction) is equal to 90

Data collection tools:

Three tools were utilized to fulfill the aim of the study**:**

Tool (I): Parturient women's knowledge regarding episiotomy care

The researchers designed this tool after searching the most recent relevant literature. (**Kridsana et al., 2020; Ononuju et al., 2020; Webb et al., 2019).** Basic data about parturient women will be gathered through the four consequently parts:

Part 1: Bio-socio-demographic data consisting of: age, educational level, occupation, residence, income, body mass index and type of family.

Part 2: Obstetrical history involving: gestational age, gravidity, abortion, antenatal visits, attending educational classes related to episiotomy care.

Part 3: Current labor data: duration of the first, second and third stage of labor, indication, length and type of episiotomy, neonatal weight and head circumferences.

Part 4: Parturient women's knowledge regarding episiotomy care: warning sign and complications of episiotomy, importance of episiotomy care, temperature of water (cold or hot), hand washing before and after the procedure, how to apply the perineal pad, number of perineal pad changes per day and the substance used to for episiotomy care to alleviate pain and promote healing.

The scoring system was proceeded as:

-Correct and complete answers were scored (2).

-Correct and incomplete answers were scored (1).

-Incorrect answers and didn't know were scored (0).

The parturient women's total score of knowledge regarding episiotomy care was estimated as follows:

-High level of knowledge ≥75%.

-Moderate level of knowledge 60 - 75%.

-Low level of knowledge <60%.

Tool (II): Pain Intensity Visual Analogue Scale (PIVAS):

This scale was originally developed by Melzack and Katz (1994). It was adopted and used by the researchers in this study. It is a self-reported scale with verbal anchors at either end that indicate no pain to severe pain. The scale is a 10 cm straight line that illustrates a continuum of pain severity. This scale used to measure the intensity of pain around the wound site as follows: Zero (no pain), 1-3 (mild pain), 4-6 (moderate pain), 7-9 (severe pain), and 10 the worst pain.

Tool (III): The Standardized REEDA Scale

The REEDA scale was first designed by (**Davidson, 1974**). Subsequently adopted from **(Roma et al., 2023**) and used by the researchers in this study for evaluating wound healing through an observational check-list which consist of five dimensions expressly as redness, edema, ecchymosis, discharge, and wound edges approximation. Every one of these five dimensions is scaled from 0-3 as follows:

a. Redness: 0= none, 1= within 0.25cm of the incision (mild), 2 = 0.5cm of the incision bilaterally (moderate), 3= beyond 0.5cm of the incision bilaterally (severe).
b. Edema: 0= none, 1= < 1 cm from the incision (mild), 2=2 cm from the incision (moderate), 3= > 2 cm from the incision (severe).
c. Ecchymosis: 0= none, 1= within 0.25cm of the incision bilaterally or 0.5cm unilaterally (mild), 2 = moderate between 0.25cm and 1 cm bilaterally or between 0.5 cm and 2cm unilaterally, 3= beyond 1cm of the incision bilaterally or 2cm unilaterally (severe).
d. Discharge: 0=none, 1= serous, 2= serosanguinous, 3= bloody and purulent
e. Edges approximation: 0= closed, 1= mild skin separation of 3mm or less, 2= moderate skin and subcutaneous fat separation, and 3= severe skin and subcutaneous fat and facial layer separation.

REEDA total score ranked from 0 to 15. A higher score reflect poor wound healing mean while the lesser score reflect good wound healing. The total score of the REEDA scale was subsequently classified as:

- Completely healed from 0 - 2.

- Moderately healed from 3-5.
- Mildly healed from 6-8.
- Not healed from 9-15.

Method

The study was implemented according to the subsequent steps:

Administrative approval:

-Prior to initiating this research an official permission was taken from the responsible authority through official letters from Faculty of Nursing at Tanta University after explaining the aim of the research which introduced to hospitals directors of obstetric departments at Tanta University and El-Menshawy hospitals to attain their acceptance and cooperation for conducting the research.

Ethical consideration:

-The Faculty Ethical Committee for Scientific Research approval was attained for implementing this research, Approval code: 371-1-2024.

-After clarifying the aim of the research, all the parturient women signed an informed consent. The researchers were ensured that study nature not associated with any harm and /or pain for the studied women.

- Privacy and confidentiality concerning the gathered data as well as the studied women's right to withdraw from the study at any time were ensured.

Development of the tools:

-The researchers were designed and utilized **Tool I** after a broad review of the most recent and relevant literatures.

-Then, the researchers were distributing **Tool I** to a jury of five experts in the specialty of obstetrics and gynecological nursing for validation, assurance its completeness and relevance finally, doing the required changes.

- The face validity of **Tool I** was calculated according to the experts' opinion after calculating content validity index (%) of its items and it was 94.5%.

-Tool II and Tool III were adopted then were used by the researchers in this study.

-The reliability of **Tool I, Tool II and Tool III** was tested by using test-retest method by Cronbach's Alpha coefficient statistical test analysis which is used to measure the internal consistency, which was .878, 0.845 and 0.933 respectively. This demonstrates the highly internal consistency of the tools.

-Fresh aloe vera gel was produced by specialist Prof. Souzan Mahmoud, professor of pharmacognosy, Pharmacy Faculty at Tanta University, Egypt. It was taken from the natural cactus using a knife to cut the cactus leaf and a spoon to scrape the aloe vera gel, the gel was then placed in a sterilized glass container and put it in the refrigerator to remain valid for using nearly four weeks.

Pilot study:

-After development of tool I, a pilot study was conducted on 10% of the total sample (9) parturient women to ensure the tool's feasibility, applicability, relevance and content validity of the tools as well as to determine any problem that may face during the study. No changes in the tools were done so all the parturient women of the pilot study were involved into the study sample.

Data collection:

-It took duration of six months starting from (January 2024 to June 2024) from Tanta University and El-Menshawy hospitals. The researchers were visited the data collection places three days weekly at the (morning,

and afternoon shifts) until the predefined sample was gathered.

-This research was conducted through three phases including assessment, intervention, and evaluation phases:

I-Assessment phase:

-The researchers had interviewed with every parturient woman individually within 4-6 hours after childbirth, they welcome her with respect and sympathy to attain her cooperation and presented themself for every woman, clarified the aim of the study and the needed time for collecting data as well as obtain their consent.

-Then, the researchers were collected the basic data, obstetric history, data of current labor, and parturient women's knowledge regarding episiotomy care using **Tool I**, then they assessed the intensity of episiotomy pain using **Tool (II),** also, the researchers were assessed the episiotomy wound using **Tool (III)**, this interview had taken 30 minutes. After the assessment the parturient women were assigned randomly in one of the three groups, 30 subjects in each group. Where the researchers prepare a box contains three papers, each one coded by the one type of the three interventions, then each woman select one paper randomly.

II- Intervention phase:

-The researchers were explain and perform the episiotomy care for each woman and give each women handout that explain the episiotomy care then; apply the randomly selected method to use (aloe vera, olive oil or normal saline).

-For group I (aloe vera group): the researcher wear gloves and apply the aloe vera on the episiotomy wound until its whole edges completely covered, then the researcher wait for 2 minutes and secure the wound with sanitary pads. The researcher was trained the woman on applying the aloe vera and instruct her to use it every 12 hours. Appropriate quantity of the aloe vera gel placed in a sterilized glass container and had given to the woman to use it twice per day for ten days.

-For group II (olive oil group): the researcher apply 10 drops of olive oil on the episiotomy wound with hands then apply dry clean perineal pad and instruct the woman to apply the olive oil every 12 hours. Adequate supply of olive oil had given to the woman to use it twice per day for ten days.

- For group III (normal saline group): the episiotomy wound washed out with 0.9% normal saline solution in measured quantities by the researchers (apply 10 cm using disposable syringe) after that dry the area and apply dry clean perineal pad. Then instructed the woman to irrigate the wound with normal saline every 12 hours daily. Sufficient amount of 0.9% normal saline solution (10 cm at each time) had given to the woman to use it twice per day for ten days.

Return-follow up:

-Studied women in the three groups were informed to return to the hospital for follow up visits during the morning shift on the 5^{th} and 10^{th} days postpartum.

-Each woman came to the hospital on the 5^{th} and 10^{th} day was assessed to determine the intensity of episiotomy pain using **Tool II** as well as the healing process of the wound was observed using **Tool III.**

-Comparison between the three groups was done to determine the most effective method for reducing episiotomy pain and improve the wound healing.

Statistical Design:

Data entry were computerized and statistically analyzed by utilizing the Statistical Package for the Social Sciences (SPSS**)** version 22. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, comparison between groups was done using Chi-square test (χ^2). For comparison between more than two means of parametric data. Friedman test a non-parametric data an alternative two one way ANOVA was repeated measures. Significance was adopted at $p<0.05$ and highly significant if $p<0.01$.

Results

Table (1): Shows the bio-socio-demographic characteristics of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups). It was noticed that the mean age of them were (22.03±3.40, 21.90±2.32 and 22.40±2.81, respectively). It was also observed that more than half (53.3%, 56.7% and 53.3%, respectively) of the studied parturient women had secondary education. As regard the studied parturient women's occupation, it was demonstrated that (63.3%, 60.0% and 63.3%, respectively) of them were housewives. Moreover, it was recorded that (93.3%, 90.0% and 83.3%, respectively) of them lived in rural areas.

Regarding the body mass index (BMI) of the studied parturient women it was clear that (56.7%, 60.0% and 53.3%, respectively) of them had more than normal BMI. While (93.3%, 90.0% and 83.3%, respectively) of them hadn't enough family income from the women's point of view. In addition, (56.7%, 90.0% and 56.7%, respectively) of them lived in extended family, with no statistically significant differences between the three groups concerning all aspect of their bio-socio-demographic data.

Table (2): Displays the obstetrical history of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups). It was evident that the mean gestational age at birth of the parturient women were (38.43±1.01, 38.13±1.31and 38.33±1.01, respectively). Also, this table reveals that the most (86.7%, 83.3% and 86.7%, respectively) of the studied parturient women were primigravida with no history of abortion. It was noted that almost (90.0%, 93.3% and 90.0%, respectively) of them had regular antenatal follow-up visits but not attending educational classes related to episiotomy care with no statistically significant differences between the three groups regarding all aspects.

Table (3): Illustrates the current labor data of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups). It was obvious that the mean duration of the first stage of labor per hour of the studied parturient women were (6.73±1.43, 6.73±1.43and 6.53±1.52, respectively). While, the mean duration of the second stage of labor per min were (31.00±0.44, 30.91±1.29 and 31.34±0.11, respectively). Moreover, the mean duration of the third stage of labor per min was (6.04±1.01, 5.13±1.67 and 5.31±1.89, respectively). This table also illustrates, the mean length of episiotomy was (3.29±0.87, 3.10 ±0.69 and 3.37±0.89), the mean neonatal birth weight per kilograms of the studied parturient women were (3.12 ± 0.26, 3.06± 0.48 and 3.19± 0.41, respectively). In addition, the

mean neonatal head circumference per centimeters were (35.11 ± 1.56, 35.26 ± 1.77 and 35.21 ± 1.39, respectively) among the three groups, with no statistically significant differences between them regarding all items of this table.

Figure (1): This figure displays the distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) according to their total score of knowledge regarding episiotomy care. It was obvious that most (90%, 90%, and 93.3% respectively) of them reported low level of knowledge concerning episiotomy care with no statistically significant differences between the three groups.

Figure (2): Illustrate the distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding the indication of episiotomy. It was evident that the primi-parity is the main indication of performing episiotomy among the most (93.3%, 96.7%, and 93.3% respectively) of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) with no statistically significant differences.

Figure (3): It represented the percentage of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding type of episiotomy. It was noticed that medio-lateral is the most common type of episiotomy among more than half (53.3%, 56.7%, and 53.3% respectively) of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups).

Table (4): Demonstrate the distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding episiotomy pain intensity pre and post intervention (5^{th} and 10^{th} days). It was revealed that (60%, 53.3% and 50% respectively) of them reported severe degree of episiotomy pain pre- intervention with no statistically significant differences. While there were significant improvement on the intensity of episiotomy pain especially among the Aloe-Vera group where (26.7% and 83.3% respectively) of them reported no pain on 5^{th} and 10^{th} days post-intervention compared to (13.3% and 60% respectively) among the olive oil group and (0.0% and 26.7 respectively) among the normal saline group with highly statistically significant differences X^2= (3.015 and 2.107 respectively) and p = (0.033* and 0.002*).

Table (5): Represent the distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding episiotomy healing using REEDA scale. It was observed that there were not statistically differences between the three groups regarding the items of REEDA scale (redness, edema, ecchymosis, discharge and approximation of edges) pre intervention compared to highly significant differences between the three groups at 5^{th} and 10^{th} days post intervention where this so obvious among the aloe-vera group.

Table (6): This table illustrates the distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) concerning episiotomy healing utilizing REEDA scale. It was noticed that (76.7%, 66.7% and 33.3 respectively) of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) had complete healing at 5^{th} day compared to (100%, 93.3% and 66.7% respectively) of them at 10^{th} day post-intervention.There is a highly significant differences F= (13.841), P = 0.001*.

Table (1): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding their bio-socio-demographic characteristics

Variables	The studied parturient women (N=90)						χ^2	P
	Aloe Vera (N=30)		Olive Oil (N=30)		Normal Saline (N=30)			
	No	%	No	%	No	%		
Age years:								
Range	19-30		19-28		20-29			
Mean±SD	22.03±3.40		21.90±2.32		22.40±2.81			
F value	2.326							
P	0.063							
Education level:								
Read and write	3	10.0	2	6.7	3	10.0	0.583	0.201
Primary or preparatory	9	30.0	10	33.3	8	26.7		
Secondary	16	53.3	17	56.7	17	53.3		
University or postgraduate	2	6.7	1	3.3	2	6.7		
Occupation:								
House wife	19	63.3	18	60.0	19	63.3	0.374	0.829
Working	11	36.7	12	40.0	11	36.7		
Residence:								
Rural	28	93.3	27	90	25	83.3	2.010	0.366
Urban	2	6.7	3	10	5	16.7		
BMI:								
Less than normal	1	3.3	2	6.7	0	0.0	6.947	0.326
Normal	12	40.0	10	33.3	14	46.7		
More than normal	17	56.7	18	60	16	53.3		
Income/month:								
Enough	4	13.3	6	20	6	20	4.012	0.248
Not enough	26	86.7	24	80	24	80.0		
Type of family:								
Nuclear family	17	56.7	27	90.0	17	56.7	1.167	0.201
Extended family	13	43.3	3	10.0	13	43.3		

***Significant (P<0.05)**

Table (2): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) concerning their obstetrical history

Variables	The studied parturient women (N=90)						χ^2	P
	Aloe Vera (N=30)		Olive Oil (N=30)		Normal Saline (N=30)			
	No	%	No	%	No	%		
Gestational age at birth (week):								
Range	38-41		37-41		37-41			
Mean±SD	38.43±1.01		38.13±1.31		38.33±1.01			
F value	1.122							
P	0.313							
Number of gravidity:							0.371	0.827
-Primigravida	26	86.7	25	83.3	26	86.7		
- Two	3	10.0	4	13.4	3	10.0		
- Three	1	3.3	1	3.3	1	3.3		
Number of abortion:							2.117	0.363
- None	26	86.7	25	83.3	26	86.7		
- One	3	10.0	4	13.4	3	10.0		
- Two	1	3.3	1	3.3	1	3.3		
Receiving regular antenatal follow up visits:							1.714	0.788
- Yes	27	90.0	28	93.3	27	90.0		
- No	3	10.0	2	6.7	3	10.0		
Attending educational classes related to episiotomy care:							0.712	0.700
- Yes	3	10.0	2	6.7	3	10.0		
- No	27	90.0	28	93.3	27	90.0		

***Significant (P<0.05)**

Table (3): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding their current labor data

Variables	The studied parturient women (N=90)			χ^2	P
	Aloe Vera (N=30)	Olive Oil (N=30)	Normal Saline (N=30)		
	Mean±SD	Mean±SD	Mean±SD		
Duration of the first stage of labor (hour)	6.73±1.43	6.73±1.43	6.53±1.52	2.461	0.466
Duration of the second stage of labor (min)	31.00±0.44	30.91±1.29	31.34±0.11	3.174	0.829
Duration of the third stage of labor(min)	6.04±1.01	5.13±1.67	5.31±1.89	2.010	0.212
Episiotomy length	3.29 ± 0.87	3.10± 0.69	3.37± 0.89	1.979	0.335
Neonatal birth weight (kg)	3.12 ± 0.26	3.06± 0.48	3.19± 0.41	2.334	0.433
Neonatal head circumference (cm)	35.11 ± 1.56	35.26 ± 1.77	35.21 ± 1.39	1.375	0.258

Significant (P<0.05)** ***Friedman test

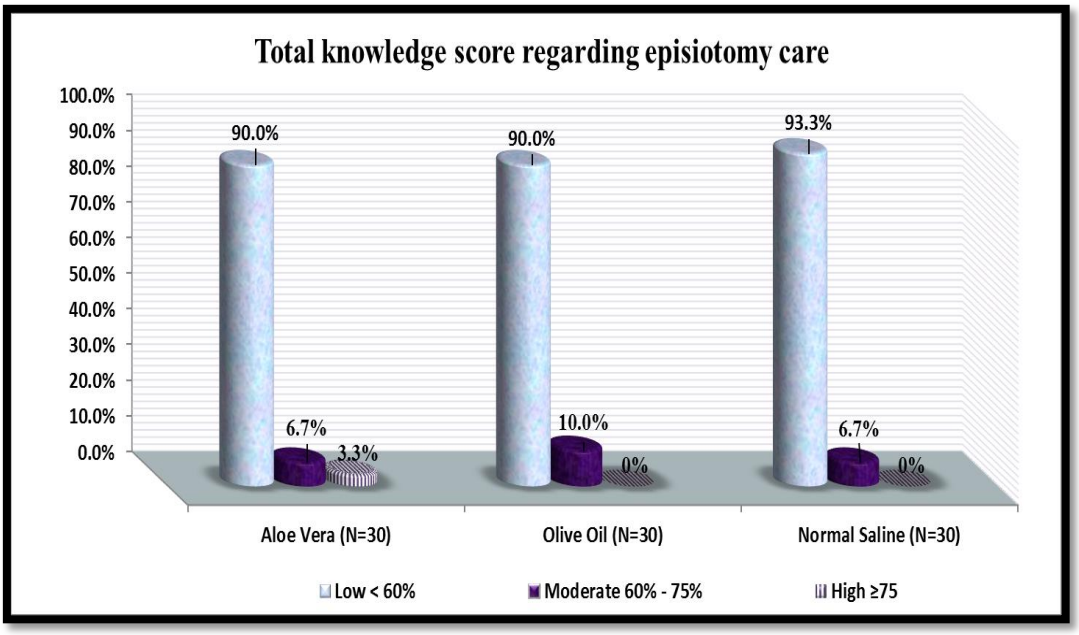

Figure (1): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) according to their total score of knowledge regarding episiotomy care

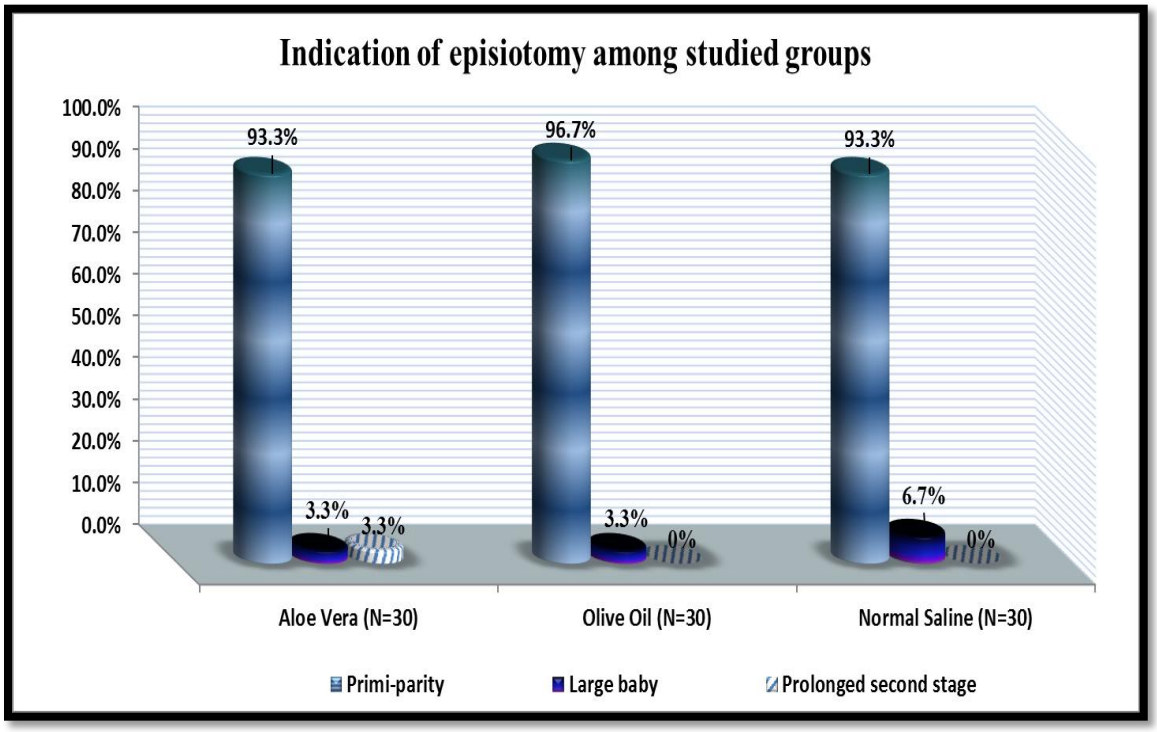

Figure (2): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding the indication of episiotomy

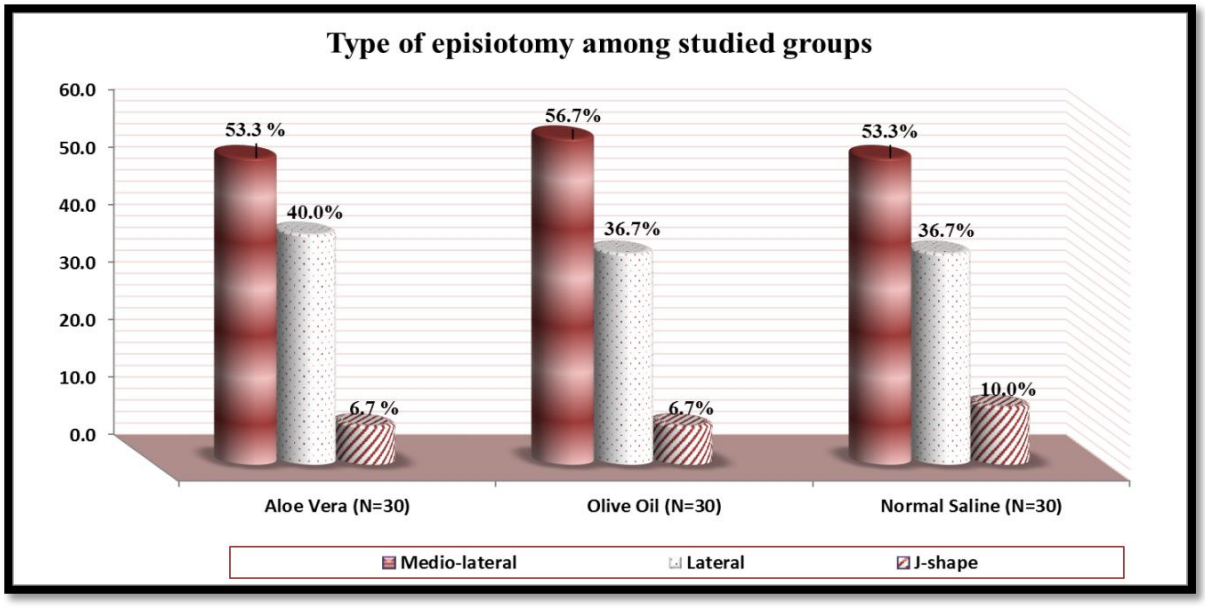

Figure (3): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding type of episiotomy

Table (4): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding episiotomy pain intensity pre and post intervention (5th and 10th days)

Variables	Pre-intervention (Assessment within 24 hours)						Post-intervention (Assessment on 5th day)						Post-intervention (Assessment on 10th day)					
	Aloe Vera (N=30)		Olive Oil (N=30)		Normal Saline (N=30)		Aloe Vera (N=30)		Olive Oil (N=30)		Normal Saline (N=30)		Aloe Vera (N=30)		Olive Oil (N=30)		Normal Saline (N=30)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No pain (0)	0	0.0	0	0.0	0	0.0	8	26.7	4	13.3	0	0.0	25	83.3	18	60.0	8	26.7
Mild pain (1-3)	2	6.7	3	10.0	2	6.7	14	46.7	6	20.0	4	13.3	5	16.7	11	36.7	17	56.7
Moderate pain (4-6)	10	33.3	11	36.7	13	43.3	8	26.7	8	26.7	7	23.3	0	0.0	1	3.3	5	16.7
Severe pain (7-9)	18	60.0	16	53.3	15	50.0	0	0.0	2	6.7	9	30.0	0	0.0	0	0.0	0	0.0
Mean ± SD	**6.12±1.34**		**5.78±1.07**		**5.99±1.68**		**3.02±1.04**		**3.92±1.99**		**4.12±1.42**		**1.04±0. 43**		**1.42±0.86**		**2.06±1.02**	
X^2	**1.048**						**3.015**						**2.107**					
P	**0.098**						**0.033***						**0.002***					

Table (5): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) regarding episiotomy healing using REEDA scale pre and post intervention (5th and 10th days)

Variables		Pre-intervention (Assessment within 24 hrs)				Post-intervention (Assessment on 5th day)				Post-intervention (Assessment on 10th day)			
		Aloe Vera (N=30)	Olive Oil (N=30)	Normal Saline (N=30)		Aloe Vera (N=30)	Olive Oil (N=30)	Normal Saline (N=30)		Aloe Vera (N=30)	Olive Oil (N=30)	Normal Saline (N=30)	
		%	%	%		%	%	%		%	%	%	
Redness	None	0.0	0.0	0.0	χ^2 = 0.310 0.855	6.7	3.3	0.0	F = 5.411 P = 0.006**	66.7	53.3	3.3	F = 10.240 P = 0.0001**
	Mild	30.0	33.3	36.7		70.0	73.3	53.3		33.3	40.0	66.7	
	Moderate	56.7	56.7	53.3		23.3	23.4	26.7		0.0	6.7	23.3	
	Severe	13.3	10.0	10.0		0.0	0.0	20.0		0.0	0.0	6.7	
Edema	None	3.3	6.7	3.3	χ^2 = 2.022 0.364	66.7	53.3	20.0	F= 5.018 P = 0.008**	100.0	76.7	33.3	F = 12.108 P = 0.0001**
	Mild	23.3	26.7	30.0		30.0	26.7	26.7		0.0	13.3	40.0	
	Moderate	46.7	43.3	40.0		3.3	16.7	40.0		0.0	10.0	26.7	
	Severe	26.7	23.3	26.7		0.0	3.3	13.3		0.0	0.0	0.0	
Ecchymosis	None	16.7	20.0	20.0	χ^2 = 0.668 0.471	70.0	60.0	26.7	F= 8.411 P = 0.007*	96.7	83.3	36.7	F= 13.911 P = 0.0001**
	Mild	46.6	46.6	53.4		23.3	26.7	50.0		3.3	13.4	43.3	
	Moderate	30.0	26.7	23.3		6.7	10.0	20.0		0.0	3.3	13.3	
	Severe	6.7	6.7	3.3		0.0	3.3	3.3		0.0	0.0	6.7	
Discharge	None	100.0	100.0	100.0	--	73.3	53.3	30.0	F= 5.264 P = 0.008*	93.3	80.0	46.7	F= 13.131 P = 0.0001**
	Mild	0.0	0.0	0.0		23.4	36.7	23.4		6.7	20.0	26.7	
	Moderate	0.0	0.0	0.0		3.3	10.0	33.3		0.0	0.0	23.3	
	Severe	0.0	0.0	0.0		0.0	0.0	13.3		0.0	0.0	3.3	
Approximation of edges	Closed	100.0	100.0	100.0	--	76.7	56.7	33.3	F= 4.963 P = 0.009**	96.7	86.7	66.7	F= 14.411 P = 0.0001**
	Mild	0.0	0.0	0.0		20.0	30.0	60.0		3.3	13.3	20.0	
	Moderate	0.0	0.0	0.0		3.3	13.3	6.7		0.0	0.0	13.3	
	Severe	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	

Friedman test *Significant (P<0.05) **Highly Significant (P<0.01)

Table (6): Distribution of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) according to episiotomy healing using REEDA scale at 5th and 10th days post intervention.

Total REEDA Score	Post-intervention							
	(Assessment on 5th day)				(Assessment on 10th day)			
	Aloe Vera (N=30)	Olive Oil (N=30)	Normal Saline (N=30)		Aloe Vera (N=30)	Olive Oil (N=30)	Normal Saline (N=30)	
	%	%	%		%	%	%	
Completely healed	76.7	66.7	33.3	**F=** 22.4041 1 **P =** 0.001**	100.0	93.3	66.7	**F=** 13.841 **P =** 0.001**
Moderately healed	23.3	33.3	33.3		0.0	6.7	20.0	
Mildly healed	0.0	0.0	26.7		0.0	0.0	10.0	
Not healed	0.0	0.0	6.7		0.0	0.0	3.3	

Friedman test *Significant (P<0.05) **Highly Significant (P<0.01)

Discussion

Despite the wide spread of performing episiotomy procedure, neglecting its associated pain and delaying the wound healing are associated with serious maternal physical and psychological consequences. Thus, proper episiotomy care is essential to enhance women's quality of life, early reassuming their ordinal life activity and minimizing episiotomy related morbidities **(Moradkhani et al., 2024)**. Therefore, this study had shed lights on the effect of aloe vera, olive oil and normal saline on episiotomy pain and healing among primi-para women.

The current study findings declared that the parturient studied women (Aloe Vera, Olive Oil and Normal Saline groups) were matching in all aspects of their socio-demograghic characteristics,obstetric history and current labor data. This matching is useful in limiting the extraneous variables which may interfere with the effect of the three interventions on episiotomy pain and healing, these results were partially agree with the finding of **(Hables, (2021) ,**who study **(**the effect of Olive Oil, lavender oil and placebo on pain intensity and healing of episiotomy in women).

Concerning, the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) total score level of knowledge regarding episiotomy care. It was obvious that the most of them reported low level of knowledge regarding episiotomy care with no statistically significant differences. The findings of the current study was in line with **(Mohamed et al., (2023)** they study (the effect of self- care guidelines on women awareness regarding post-partum perineal wound care) and mentioned that the most of

women reported poor knowledge related to perineal wound care on pre–assessment, this agreement attributed to the fact that in adequate health education during ante-natal visits, in experienced health care providers and lack of child birth preparation classes.

Regarding, the type and indication of episiotomy, it was evident that most of the studied parturient women (Aloe Vera, Olive Oil and Normal Saline groups) undergoing medio-lateral episiotomy and they primi-para. This study results were congruent with **(Roma et al., (2023)** they investigate (the effect of dry heat application on perineal pain and episiotomy wound healing among primipara women). Also, **(Hables, (2021)** findings partially agree with the current study where the main episotomy type among the three studied groups is the medio lateral and the main indication among olive oil and lavender groups was prim-parity, but large baby is the main indication among placebo group.

Furthermore, this finding supported by **(Garner et al., (2021)** they searched about (midline and medio-lateral episiotomy: risk assessment based on clinical anatomy) and justified that medio-lateral type is done commonly due to the extension to the anal sphincter is less common, so it is more suitable in case of instrumental delivery and short perineum. On contrary this study not matched with the **(World Health Organization, (2018)** that recommends performing episiotomy for only 10% of primipara women.

Considering the level of episiotomy pain intensity among the studied parturient women pre and post intervention (5^{th} and 10^{th} day). It was revealed about half of them reported severe degree of episiotomy pain pre-intervention with no statistically significant differences. These findings mostly agree with (**Roma et al., (2023)** they found that more than one third of the studied women had severe pain prior to the intervention. In the same line, (**Kenarsari et al., (2019)** they studied (the effect of Olea ointment on post-episiotomy pain severity in primi-parous women: a paralleled randomized controlled clinical trial) and clarified that there are no significant differences among the study subjects related to episiotomy pain intensity pre-intervention.

On the other hand, there were significant improvement on the intensity of episiotomy pain especially among the aloe-vera group followed by olive oil group and the normal saline group with highly statistically significant differences at the 5^{th} day and 10^{th} day post-intervention. These results were in harmony with (**Essa et al., (2020)**, who carried out a study of (the effect of aloe Vera versus normal saline on pain relief and healing process of episiotomy) and concluded that there was a significant difference among both groups related the intensity of episiotomy pain at the 5^{th} day and 10^{th} day post-intervention.

In addition, this study supported by (**Nazari et al., (2019)**, who investigate (the effect of aloe vera gel on perineal pain and wound healing after episiotomy among primi-parous women) and summarized that applying aloe vera in comparison with normal saline minimize the intensity of pain. This improvement in episiotomy pain intensity can be clarified by the mechanism of action for aloe vera that contain carboxy

peptidase which is the powerful anti-inflammatory factor and magnesium lactate that inhabit histamine formation which resulting in irritation and itching of the skin. It also boosts the immunity (**Hekmatpou, et al., 2019)**.

Also, consistent with the present study the findings of **(Hables, (2021)** ,who detected there was a significant effect of olive oil in comparison with placebo on lessen the intensity of episiotomy pain. Furthermore, the current study partially supported by **(Fili et al., (2024),** who investigate **(**Randomized controlled trial of the effectiveness of olive and black seed oil combination on pain intensity and episiotomy wound healing in primiparous women) and proved that this combination improve the episiotomy pain intensity. This accordance between the present study and the other studies assigned to the influence of olive oil that has anti-inflammatory properties and rich in substance such as antioxidant that reduce inflammation and oleo-canthal that relieve pain **(Taheri et al., 2021)**.

Regarding the healing of episiotomy using REEDA scale. It was noticed that there were significant improvement on wound healing among aloe vera and olive oil groups at 5^{th} day and 10^{th} day post-intervention in comparison with the normal saline group. That improvement so obvious between the aloe vera groups with highly significant differences. That finding was in agreement with (**Maternity et al., (2022),** who researched **(**the aloe vera effectiveness for perineal wound healing for post-partum mothers) and justified that aloe vera was very effective on promoting wound healing.

Moreover this findings supported by (**Zahra et al., (2024),** who investigate **(**Comparative efficacy of aloe Vera gel versus normal saline in accelerating episiotomy wound healing: a randomized controlled trial) and concluded that aloe vera significantly enhances the healing of episiotomy wounds compared to the normal saline. This harmony between the present and the mentioned studies can be explained by the mechanism of aloe vera which well known for its ability to heal wounds, protect skin, fight diabetes, inhabit infections, viruses, and tumor growth. Aloe vera can also promote the synthesis of hyaluronic acid and dermatan sulfate in the granulation tissue of healing wounds and decrease thromboxane that is an inhibitor of wound healing. Also it stimulates collagen synthesis **(Essa et al., 2020)**.

Again, our study went hand to hand with the study of (**Hables, (2021)** who declared that olive oil had significant effect on episiotomy healing than placebo. Meanwhile, our findings somewhat similarly to the results of **(Fili et al., (2024)** ,who confirm that olive and black seed oil combination enhance wound healing. This agreement between two studies related to the fact that olive oil has antibacterial, antimicrobial, antifungal and wound healing properties as it contains many nutrients that inhibit, kill harmful bacteria and its phenolic compounds promote cell repair **(Shayan et al ., 2020)**.

Conclusion

Based on the findings of the present study, it can be concluded that the results of the present study supports its hypothesis which revealed that: applying aloe vera, followed by olive oil are very effective in alleviating

episiotomy pain and promote healing among primi-para women compared to normal saline.

Recommendations

Based on the results of the present study, we can recommend the following:

-Applying of aloe vera followed by olive oil is highly effective in managing episiotomy pain and promotes its healing.

-Proper training for maternity nurses about the essential utilization of aloe vera and olive oil that enhance episiotomy healing and lessen perineal pain.

-Boost women's awareness regarding the value of performing episiotomy care using aloe-vera and olive oil approaches to avoid wound infection.

-Further studies on larger sample size are needed to establish standardized evidence.

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