

The Effect of Perineal Massage during the Second Stage of Labour on Perineal Outcomes

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Abstract

Perineal tears affect approximately 80% of women during childbirth worldwide. Thus, perineal management techniques are a necessary need to prevent perineal tears during childbirth.

Aim: The current study aimed to examine the effect of perineal massage during the second stage of labor on perineal outcomes.

Design: A quasi-experimental design was utilized in this study.

Setting: The study was conducted in the labor & delivery unit at Ain Shams Maternity Hospital, Egypt.

Sample: A purposive sample of one hundred parturient women divided into study and control groups (50 women in each group) were recruited according to inclusion and exclusion criteria.

Tools of data collection: Three tools were used.

Tool 1: A structured interviewing schedule which used to assess demographic characteristics, obstetrics, and antenatal history.

Tool 2: Visual analogue scale.

Tool 3: Assessment and observational labor outcomes sheet which were used to assess the second stage of labor and perineal condition after labor.

Results: The results of the present study revealed that women in the study group experienced a low incidence of perineal tears representing 8% as compared with 88% in the control group with a statistically significant difference among both groups ($P \leq 0.05$). Also, 36% of women in the study group had episiotomy as compared with 50% in the control group. Furthermore, improvement in perineum pain intensity after the utilizing perineal massage than before.

Conclusion: The study concluded that the use of perineal massage during the second stage of labor was effective in reducing perineal tears, the incidence of episiotomy extension, pain intensity, and the duration of second stage of labor.

Recommendations: Increase awareness about the importance of perineal massage to facilitate childbirth and improve maternal outcomes. Moreover, maternity nurses should be trained for perineal massage technique to be able to apply it in labour unit.

1. Introduction

The experience of labour and delivery is the most important moment in a woman's and her spouse's life, and it can have a tremendous physical, emotional, and psychological impact. One of the very crucial stages of labour is the second stage which starts with full cervical dilation and effacement and ends with the expulsion of the fetus. The mechanism of labour during this stage starts with engagement, descent, flexion, internal rotation, extension, external rotation, and expulsion of the fetus (Leifer, 2022).

The process of childbirth is lauded by numerous physical and psychological stressors. These stressors begin from the beginning of the first stage of labour and reach their maximum at the second stage, which is considered the climax of the birthing process. The most important sources of stress are severe abdominal and back pain associated with spontaneous and uncontrolled uterine contractions, and severe perineal pain associated with stretching and tears of the perineal area and pelvic floor muscles (Ghonemy, et al., 2017 and Kaur, 2022).

Keywords:

Perineal massage, The second stage of labour, Perineal outcomes.

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Vaginal births are often associated with perineal trauma. Several factors increase the risk of perineal trauma including instrumental delivery, longer duration of the second stage, nulliparity, large for gestational age, and malposition. Nulliparity increases the risk for perineal laceration at vaginal birth with a rate of 91.4% as compared to 68.8% in multipara. Moreover, episiotomy was performed three times more often among nulliparous than parous women (ShanHong et al., 2022).

Perineal tears can be categorized in its severity to four degrees. The first degree occurs when the laceration includes only the fourchette, superficial perineal skin, and or vaginal mucosa. The second-degree perineal tears occur when the laceration extends behind the fourchette, vaginal mucosa, and or perineal skin to include fascia and perineal muscles, but it does not reach the anal sphincter. In the third-degree perineal tears, the fourchette, vaginal mucosa, perineal skin, muscles, and anal sphincters are included. A fourth-degree perineal tear is diagnosed when the tear extends to not only the anal sphincter but also the rectal mucosa which is torn (Durham & Chapman, 2022).

Perineal trauma is associated with perineal pain affecting women's recovery following childbirth and severe perineal tears have been associated with urinary or fecal incontinence and sexual dysfunction as a negative sequel of it. Thus, perineal techniques during the second stage of labour have been reported that perineal massage increase intact perineum, reduce episiotomy and third-fourth-degree perineal tear rates as well as perineal massage increase vasodilatation, blood flow, and tissue elasticity, and reduce perceived perineal pain at the second stage which consequently reduce the level of nociceptive stimulation and increase the clearance of inflammatory mediators (Sarhan et al., 2022).

Minimizing the adverse effect of perineal damage is vital and essential for a certain reason, including better physical outcomes for women following childbirth, improving the immediate maternal-newborn bonding, and initiating breast-feeding, decreasing and/or preventing the infection, urine and/or fecal incontinence, painful intercourse, and enhance the pelvic floor muscle tone (Li et al., 2023).

Therefore, one of the fundamental concerns of midwifery practitioners is providing comfort and preserving the perineal during the second stage of labour. This is crucial because it is like a hood to cause both short term and long-term morbidity caused by trauma. Thus, in the second stage of labour, maternity nurses can utilize a variety of non-pharmacological techniques/practices to prevent perineal tearing as perineal massage (Sharma et al., 2022).

The mechanism of action for performing perineal massage with lubrication during the second stage of labour is stated in some research. It is

assumed to increase the tissues blood supply, and tissue elasticity, which help in relaxing the perineum, increase the flexibility of the perineal muscles, stretch perineal during labour without rupture and no need for an episiotomy, and increase the release of internal endorphin which responsible about the relieving of pain. Moreover, the lubricant facilitates the delivery of fetal head (Smith et al., 2022).

Significance of the study:

According to WHO (2021) the anticipated global birth rate is 17.873 births per 1,000 people. Worldwide, the incidence of third- and fourth-degree perineal tears differ from country to another as it ranged from 0.1% in China, India, and Cambodia to 15% in Philippines. The incidence also ranged from Null to 76.3% according to the type of health care facilities. A study conducted in England concluded that the prevalence of perineal tear among primiparous women was 91.4% included all degrees of perineal tears and episiotomy. The prevalence was much lower among multiparous women 68.8% (Sykes, 2021).

In Egypt, the exact incidence of perineal tears is not mentioned completely, but there are some scattered small studies which investigated the incidence of perineal tears in some Egyptian areas as in a study which was conducted at Zagazig /Egypt about the risk factors for perineal tears among low-risk parturient women, reported that 27% of the women had spontaneous perineal tears (second degree and more) while, 16% had intentional tears (episiotomy). So, the total incidence among the study sample was 43% (Mohamed, 2019). Another study by Mohamed et al. (2019) in Mansour's/Egypt clarified that the prevalence rate of perineal tears ranged about (34.5%) one-third among parturient women.

Perineal massage is used to prevent or decrease the incidence and the degree of perineal tear and pain is still controversial. Research about Sarhan et al., (2022) in Menoufia support and recommend the use of perineal massage technique which decreases the perineal tears to 4%; and other researchers reported there are no benefits for its use. Also, some researchers recommended the use of other non- pharmacological approaches. These contradictory results necessitate further studies to fill the gap in this respect, so the aim of this study is to examine the effect of perineal massage during second stage of labour on perineal outcomes.

Aim of the study:

The aim of the current study was to examine the effect of perineal massage during the second stage of labour on perineal outcomes.

Research Hypotheses:

- Women who receive the perineal massage technique will experience lower adverse perineal outcomes during the second stage of

labour compared to those who do not receive perineal massage.

- Women who receive perineal massage will have a better duration of labour compared to those who do not receive perineal massage.

Operational Definition:

The term “Perineal Outcomes” in this study refers to the condition of the perineum, such as, intact perineum, episiotomy, tear, and perineal pain during the second stage of labour after fetal expulsion.

2. Subject and Methods

Research Design:

A quasi-experimental design was used to achieve the study aim.

Research Setting:

The study was conducted at labour & delivery unit at Ain Shams Maternity Hospital which affiliated to Ain Shams University. It provided free services for maternity as well as gynecological clients, to rural and urban areas.

Subjects (Sampling):

Women in the second stage of labour who admitted to the labour and delivery unit in Ain Shams Maternity Hospital.

Sample Type:

A Purposive sampling was used to collect the study subjects according to the following inclusion criteria.

Inclusion criteria:

- Age ranged from 20-35 years old.
- Full term pregnancy (gestational age from 38-42 weeks).
- Primigravida or have one previous labour.
- Women in second stage of labour.
- Has a single fetus with cephalic presentation.
- Has intact perineum.
- No history of medical diseases or obstetric complications.

Exclusion criteria:

- Failure to progress in labour.
- Fetal distress.
- Erythematous rashes and edema in the perineum.
- Previous scarred perineum.
- Narrowed pelvis or macrosomia.
- Vaginal infection.

Sample size:

Total of one hundred parturient women were recruited in the study through a period of six months. Women divided into study and control groups (50 women in each group) according to the following inclusion and exclusion criteria.

Tools of data collection:

Three tools were used for data collection in the present study.

Tool (1): A structured interviewing schedule: which was developed by the researcher based on related literature review, it included three parts:

Part 1: Demographic data which entailed: age, residence, level of education, occupation, type of occupation (need to effort or not) and working hours, income/month, type of family and anthropometric measurements (weight, Height, BMI).

Part II: Obstetric history which entailed: gestational age, numbers of parity and numbers of abortion.

Part III: Antenatal history was included data regarding place of antenatal care, starting antenatal care at which month of pregnancy, numbers of the visit to antenatal care, exercises during pregnancy, and minor discomforts during current pregnancy.

Tool (2): Visual Analogue Scale (VAS):

It was a standardized tool and originally adopted by **Mc Caffery and Pasero (1999)**. It is a self-reported tool consisting of 10 cm. straight line, which represents a continuum of pain intensity and has verbal anchors at opposite ends representing no pain to severe pain. This scale was used to assess intensity of perineal pain as follows: score zero indicate (no pain), score 1-2 indicate (mild pain), score 3-4 indicate (moderate pain), score 5-6 indicate (severe pain), score 7-8 indicate (very severe), and score 9-10 indicate (the worst pain).

Tool (3): Assessment and observational labour outcome: This tool adapted by **Ibrahim et al (2019)**; it was included three parts:

Part I: Assessment of the second stage of labour, which was included data related progress of labor, onset of labour, membrane condition, liquor amni, duration of the second stage (min), need for pain relief before and after perineal massage, fetal birth weight and fetal head circumference.

Part II: Assessment of perineal condition after labour, which was included data regarding perineal condition (intact perineum, tear not required repair, tear required repair, episiotomy), sites of tears (vaginal, labial, perineal), degree of perineal tear (first degree included lining of the vagina, second degree extend to the submucosal tissues of the vagina, third degree extend to the deeper layers of the vagina and the muscles that make up the anal sphincter), degree of episiotomy extension (No or mild extension, second degree or marked extension), perineum edema (present, not present), perineum ecchymosis (present, not present).

Tools validity and reliability:

Five maternity and newborn health nursing specialists from various faculties evaluated the produced tool's content validity and the recommended any necessary modifications was done. The VAS had strong intraclass correlation coefficient (ICC) reliability for measuring acute pain. Nineteen percent of the pain ratings could be duplicated within nine millimeters. These results indicate that the VAS was reliable enough to be used to measure acute pain. Using the Cronbach's alpha coefficient test (0.885), the researcher calculated the tool's reliability to assess the internal consistency of the tool. This shows that the tool is very reliable.

Ethical Consideration:

The Scientific Research Ethics Committee granted official approval to carry out the intended study. Voluntary participation was ensured, and participants were fully informed about the study and their involvement. Ethical considerations encompassed clarifying the study's purpose and characteristics, granting women the right to withdraw at any point, and ensuring the absence of risk in the study. Preservation of confidentiality and anonymity was also assured.

II- Operative design:

Pilot Study:

A pilot study was conducted on 10% (5 women in each group) one month prior to the data collection phase to test the feasibility of the study as well as the clarity, objectivity of the tools and needed to fulfill the tool.

Field work:

After official permission obtained from previously mentioned settings. The study was conducted over six months started from the beginning of January 2023 to June 2023. The researcher attended the Ain Shams Maternity Hospital in labour and delivery unite two days per week from 9:00 am. to 3:00 pm. The current study was achieved through for phases: Preparatory phase, assessment phase, implementation phase, and evaluation phase.

The Preparatory Phase: A reviewing of past and current literature covering the various aspects of the problem was done using books, articles, magazines, and network about studies related to perineal trauma as well as various perineal supportive techniques used during the second stage of labour.

Assessment phase: All women recruited in this study were informed that participation is voluntary and were ensured about privacy and confidentiality. Assessment was done by the researcher through interviewing every woman individually in both groups during the first stage of labour. in both groups, to assess women regarding demographic data, obstetric history, and antenatal history; this interview took 20 minutes.

Implementation phase: The total sample (100 women) will be divided into groups (study = 50 and control= 50) After obtaining the acceptance of women to participate in the study, they were divided into two equal groups:

- **Study group:** pregnant women receiving perineal massage technique during the second stage of labour. Perineal massage was implemented by the researcher for each woman during the second stage of labour. The researcher assessed the perineum pain before and after applying the perineal massage utilizing VAS tool to determine the pain score before and after intervention. The researcher put the women in the lithotomy position and assess with obstetrician the progress of labour, onset of labour, membrane condition, and liquor amni. The researcher started to apply the perineal massage when cervical dilatation was 10 cm. and stretching of

the perineum with each contraction. Researcher was put five milliliters of KY gel on the two index and middle fingers, then begin to massage the perineum in U shape reciprocal movement: also, inside the vagina with massaging of the vaginal wall toward the rectum up and down continuously throughout the process of delivery. Researcher stopped perineal massage technique if was uncomfortable for the woman.

- **Control group:** pregnant women receiving routine care during second stage of labour of the hospital.

Evaluation Phase: The researcher evaluated the perineal condition immediately after intervention, such as, intact, tears (first degree included lining of the vagina, second degree extended to the submucosal tissues of the vagina, third degree extended to the deeper layers of the vagina and the muscles that make up the anal sphincter), applying episiotomy, assessed the episiotomy extension, perineal edema, and perineum ecchymosis. Additionally, the researcher evaluated the duration of labour, fetal birth weight, fetal head circumference, perineal pain after intervention and needed for pain relief medications.

Administrative design:

Official letters, including the title and aim of the study, were issued from the Faculty of Nursing Helwan University, after taken the approval after ethics committee and submitted to the administrator personal at Ain Shams Maternity hospital for conducting the study.

Statistical design:

Data was analyzed using the Statistical Package for Social Science (SPSS) version 25. Qualitative data was presented as numbers and percentages by using mean and standard deviation. Relations between different qualitative variables were tested using independent Chi-square test (χ^2), T- test and reliability test. Relation between quantitative variables was tested using Pearson correlation coefficient (r). Probability (p -value) < 0.05 was considered significant, < 0.001 was considered highly significant, and > 0.05 was considered not significant.

3. Results

Table (1): highlights the demographic characters of the studied women. Most women among study and control groups were aged ranged from 20 to 25 years (62%, and 60%, respectively). Also, most women in study and control groups had secondary education (48% & 54% respectively). More than half (58%) of the women in the study group were live in urban residence as compared with fifty four percent 54% in the control group with no statistically significant difference between both study and control groups.

Table (2): reveals the anthropometric measurements of current pregnancy, with the mean of height was (158.61 ± 2.16 and 158.21 ± 2.21 respectively) in study and control groups. While the mean of weight was (71.97 ± 8.28 and 74.86 ± 3.21 respectively) in study and control groups. Regarding mean BMI was

(28.93 ± 0.93 and 29.12 ± 1.02 respectively) in the study and control groups with no statistically significant difference.

Table (3): presents the obstetric history, which reveals that (52 % and 48% respectively) of women in the study and control groups 36 - 38 weeks while with no statistically significant difference ($P = 0.418$). Additionally, the numbers of abortion 82 % and 80% of women had no abortions in both study and control group no statistically significant difference ($P = 1.01$).

Table (4): presents the antenatal history about current pregnancy, which reveals that 98 % of women in the study group had antenatal care as compared with 96% in the control group with no statistically significant difference ($P = 0.55$). Additionally, most of women 74% were followed antenatal care in maternal and child hospital (MCH) in the study group as compared with 86% in the control group with no statistically significant difference ($P = 0.177$). Regarding mean antenatal visits of the study group was (4.46 ± 2.8) as compared with (5.5 ± 2.38) in the control group with no statistically significant difference ($P = 0.156$). Also, 78 % of study group did exercise during pregnancy (walking exercise) as compared with 62 % in the control group with no statistically significant difference ($P = 0.07$). Concerning to minor discomfort during pregnancy (56 % and 66 % respectively) of women in the study and control groups had constipation with no statistically significant difference ($P = 0.55$).

Table (5): shows pain intensity before and after utilizing of perineal massage and revealed an improvement in the pain intensity among study group that 36% of women in the study group had moderate pain before utilizing of perineal massage as compared with 20% of women in the study group after utilizing perineal massage. Also, 60 % of women in the study group had severe pain before utilizing of perineal massage as compared with 10% in the study group after utilizing of perineal massage. Additionally, 4 % of women in the study group had worst pain before utilizing of perineal massage as compared with 0% in the study group after utilizing of perineal massage with highly statistical significance difference ($P \leq 0.001$).

Table (6): shows that 80 % of women in the study group had spontaneous labour as compared with 72% of women in the control group with no statistical significance difference ($P = 0.349$). Regarding the mean duration of 2nd stage of labour results was (70.98 ± 28. 2 and 102.8 ± 33.3 respectively) in the study and control groups with highly statistical

significance difference ($P \leq 0.001$). In addition, regarding need for pain relieve 20 % of women in the study group needed of pain relive as compared with 80 % in the control group; however, 80 % of women in study group with highly statistical significance difference ($P \leq 0.001$).

Table (7) Highlights the perineal integrity after delivery in the studied two groups, which shows that the incidence of episiotomy was significantly higher ($p=0.04$) in the control group (50. %) than in the study group (36%). Also 92 % of women in study group had intact perineum as compared with 4% in the control group with highly statistically significance difference among both groups ($P \leq 0.002$). Also, 8% of women in the study group had perineal tear as compared with 88 % in the control group with statistically significance difference among both groups ($P \leq 0.05$). Related to the perineal edema, it represents 10% of women in the study group as compared with 84% in the control group with statistically significance difference among both groups ($P \leq 0.01$), while 10% of women in the study group had perineal ecchymosis as compared with 36% in the control group with statistically significance difference among both groups ($P \leq 0.02$).

Figure (1): demonstrate the degree of perineal tears, only 8 % of women in the study group had 1st degree of perineal tears as compared with (8%, 42% and 50% respectively) in the control group had 1st, 2nd, and 3rd degree of tears with highly statistically significance difference among both groups ($P \leq 0.001$).

Table (8) shows that the mean neonatal birth weight of both study and control groups was (2980 ± 144.6 and 3154 ± 144.5 respectively) with no statistical significance difference $P = 0.406$. In addition to mean neonatal head circumference of both study and control groups was (34.7 ± 0.67 and 34.9 ± 0.69 respectively) with no statistical significance difference ($P = 0.678$).

Figure (2) Reveals the significant relationship between perineal massage and perineal tear, incidence of episiotomy, duration of 2nd stage of labour and perineal pain intensity among study group, with statistical significance difference ($P= 0.002, 0.003, 0.001$ and 0.04 respectively) and ($R= 0.671, 0.437, 0.462$ and 0.739 respectively).

Table (9) shows the significant relationship between number of parity and neonatal head circumference and incidence of perineal tear in study group with statistical significance difference ($P = 0.001$ and 0.03 respectively) and ($R = 0.60$ and 0.11 respectively).

Table 1: Distribution of the Women Regarding Demographic Characteristics (N=100)

Variable	Study Group (N=50)		Control Group (N=50)		X ²	P-Value
	No	%	No	%		
Age						
• 20 - 25 years	31	62	30	60	13.931	0.455 (NS)
• 26 - 30 years	12	24	11	22		
• 31 - 35 years	7	14	9	18		
Mean(\bar{x}) \pm SD	25.4 \pm 3.9		25.66 \pm 4.3		T= 1.27	0.261
Residence						
• Rural	21	42	23	46	0.162	0.687 (NS)
• Urban	29	58	27	54		
Education						
• Illiterate	2	4	2	4	1.367	0.850 (NS)
• Primary education	1	2	2	4		
• Preparatory education	3	6	4	8		
• Secondary education	24	48	27	54		
• University / postgraduate education	20	40	15	30		
Employment status						
• Work	31	62	23	46	0.576	0.108 (NS)
• Not work	19	38	27	54		

NS: Not Statistically significantly difference

Table 2: Distribution of the Women Regarding Anthropometric Measurements (N=100)

Variable	Study Group (N=50)		Control Group (N=50)		T- test	P-value
	\bar{x}	SD	\bar{x}	SD		
Height (cm.)	158.6	2.16	158.21	2.21	0.13	0.91 (NS)
Weight (Kg.)	71.97	8.28	74.86	3.21	1.05	0.38 (NS)
BMI (Kg/Cm ²)	28.93	0.93	29.12	1.02	2.05	0.15 (NS)

NS: Not Statistically significantly difference

Table (3): Distribution of the Women Regarding Obstetric History (N=100)

Variable	Study Group (N=50)		Control Group (N=50)		X ²	P-value
	N	%	N	%		
Gestational Age by Weeks						
• 36-38 weeks	26	52	24	48	T-test 0.66	0.418 (NS)
• 39-41 weeks	24	48	26	52		
No. of Abortion						
• 0	41	82	40	80	T-test 98.01	1.01 (NS)
• 1	7	14	9	18		
• 2	2	4	1	2		

NS: Not Statistically significantly difference

Table (4): Distribution of the Women Regarding Antenatal Care (N=100)

Variable	Study Group (N=50)		Control Group (N=50)		X ²	P-value
	N	%	N	%		
Antenatal Care						
• Yes	49	98	48	96	0.344	0.55 (NS)
• No	1	2	2	4		
If Yes Where?	4	10	8	10		
• Private Hospital	7	14	5	10		
• Maternal and child hospital (MCH)	38	76	35	70		
Starting antenatal care						
• First trimester	47	74	43	86	1.82	0.177 (NS)
• Second trimester	3	6	7	14		
• Third trimester	0	0	0	0		
No. of antenatal Visits						
• 1-3 visits	25	50	9	18	T-test 2.04	0.156 (NS)
• 4-6 visits	14	28	27	54		
• More than 6 visits	11	22	14	28		
$\bar{x} \pm SD$	4.46 ± 2.8		5.5 ± 2.38			
Exercise during pregnancy						
• Yes	39	78	31	62	3.07	0.07(NS)
• No	11	22	19	38		
what type of exercise:	39	100	31	100		
• Walking Exercise						
Minor discomforts during current pregnancy:						
• Constipation					1.188	0.55 (NS)
• Hemorrhoids	28	56	33	66		
• Varicose veins	2	4	1	2		
	20	40	16	32		

NS: Not Statistically significantly difference

Table (5): Distribution of the Women Regarding Pain Intensity in Both Groups Before and After Utilizing Perineal Massage (N=100)

Variable	Before intervention				After intervention				X ²	P-value
	Study Group (N=50)		Control Group (N=50)		Study Group (N=50)		Control Group (N=50)			
	N	%	N	%	N	%	N	%		
Pain Scale:										
• No Pain (0)	0	0	0	0	0	0	0	0	90.51	≤ 0.001** (HS)
• Mild (1-3)	0	0	0	0	35	70	0	0		
• Moderate (4-6)	18	36	16	32	10	20	16	32		
• Severe (6-9)	30	60	31	62	5	10	31	62		
• Worst pain possible (10)	2	4	3	6	0	0	3	6		

** (HS) Highly Statistically significantly difference

Table (6): Distribution of Women Regarding Characteristics of Second Stage of Labour Among Both Groups (N=100)

Variable	Study Group (N=50)		Control Group (N=50)		χ ²	P-value
	N	%	N	%		
Progress of Labour					0.877	0.349 (NS)
<ul style="list-style-type: none"> Spontaneous labour Induced labour 	40 10	80 20	36 14	72 28		
Duration of second stage of labour (min)					0.48	≤ 0.001** (HS)
<ul style="list-style-type: none"> 20 - 60 min. 61 - 120 min. 121 - 180 min. 	20 30 0	40 60 0	7 29 14	14 58 28		
$\bar{x} \pm SD$	70.98 ± 28.2		102.8 ± 33.3			
Need for pain relief.					57.85	≤ 0.001** (HS)
<ul style="list-style-type: none"> Yes No 	10 40	20 80	40 10	80 20		

NS: Not statistically significantly difference** (HS). Highly significantly difference
 ** (HS) Highly Statistically significantly difference

Table (7): Distribution of Women Regarding the Perineal Assessment After Labour (N=100)

Variable	Study Group (N=50)		Control Group (N=50)		χ ²	P-value		
	N	%	N	%				
Episiotomy:					33.53	≤ 0.04* (S)		
<ul style="list-style-type: none"> Yes No 	18 32	36 64	25 25	50 50				
Degree of episiotomy extension:					85.20	≤ 0.002** (HS)		
<ul style="list-style-type: none"> No Mild extension Marked extension 	18 0 0	36 0 0	3 12 10	6 24 20				
Perineal condition:							88.08	≤ 0.05* (S)
<ul style="list-style-type: none"> Intact perineum Tear not required repair. Tear required repair 	46 4 0	92 8 0	2 0 48	4 0 96				
Sites of tear:					45.42	≤ 0.01** (S)		
<ul style="list-style-type: none"> Vaginal tear Labial tear Perineal tear 	0 0 4	0 0 8	4 0 44	8 0 88				
Perineal edema:					30.82	≤ 0.02** (S)		
<ul style="list-style-type: none"> Present Not present 	5 45	10 90	42 8	84 16				
Perineal ecchymosis:								
<ul style="list-style-type: none"> Present Not present 	5 45	10 90	18 32	36 64				

*(S) Statistically significantly difference, (HS). Highly significantly difference

Figure (1): Distribution of the Women Regarding Degree of Perineal Tear After Utilizing of Perineal Massage among both Groups. (N=100)

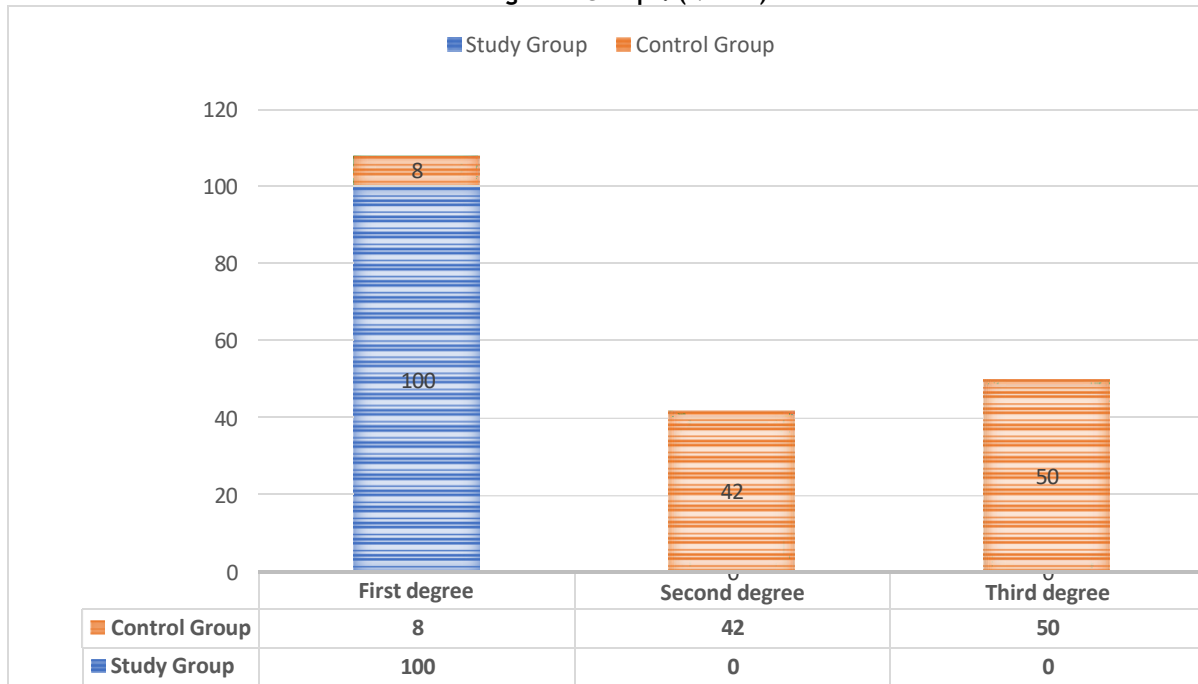
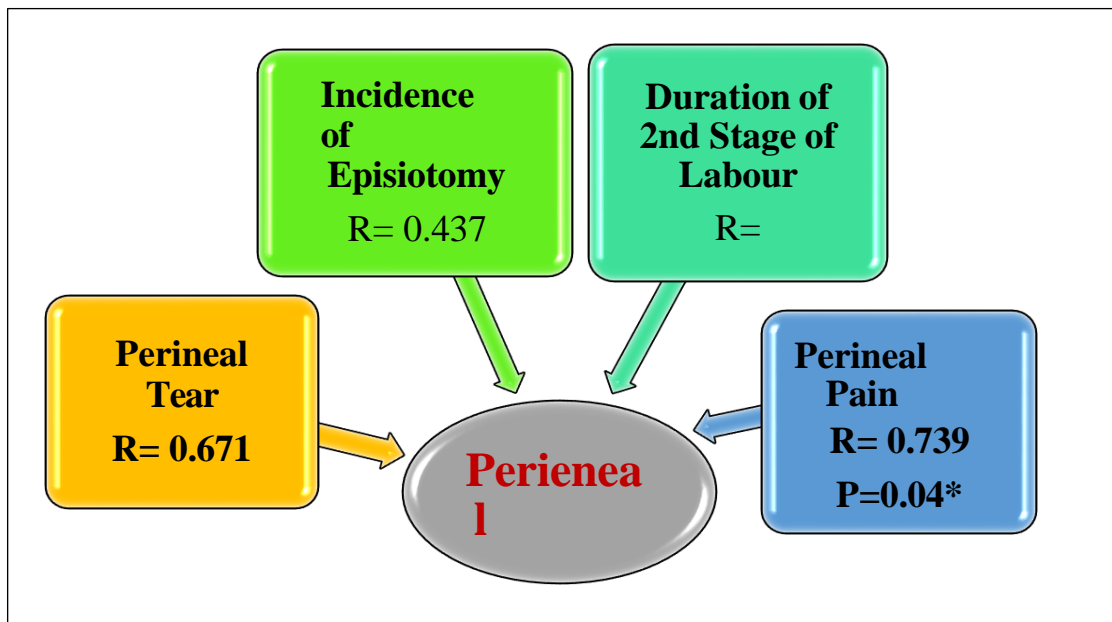


Table (8): Distribution of Women Regarding Their Neonatal Characteristics Immediately After Labour (N=100).

Variable	Study Group (N=50)		Control Group (N=50)		T-test	P-Value
	\bar{x}	SD	\bar{x}	SD		
Neonatal Birth Weight (NBW)(Kg)	2980	144.6	3154	144.5	0.698	0.406 (NS)
Neonatal Head Circumference (NHC) (cm.)	34.7	0.67	34.9	0.69	0.153	0.592 (NS)

NS: Not Statistically significantly difference

Figure (2): Relationship between Perineal Massage and Perineal Tear, Incidence of Episiotomy, Duration of Second Stage of Labour and Perineal Pain Intensity Among Study Group (N=50).



*(S). Statistically significant difference at $p \leq (0.05)$.

****(HS)**. Highly statistically significant difference at $p \leq (0.01)$.

Table (9): Relation between number of parity and neonatal head circumference and incidence of perineal tear in study group (N=50).

Variables	Perineal Tears	
	R	P-Value
Numbers of Parity	0.60	0.001** (HS)
Neonatal Head Circumference	0.11	0.03* (S)

*(S). Statistically significant difference at $p \leq (0.05)$.

****(HS)**. Highly statistically significant difference at $p \leq (0.01)$.

4. Discussion:

Common vaginal birth problems including perineal pain and tears have a detrimental effect on the physical and mental well-being of the women. Therefore, it is vital to prevent perineal tears, and midwives play a key role in this prevention by adopting non-pharmacological strategies; like, use of perineal massage during the second stage of labour (Li, *et al.*, 2023).

Perineal massage during the second stage of labour is documented in some research. It is assumed to increase the tissues blood supply, and tissue elasticity, helpful in relaxing the perineum, increase the flexibility of the perineal muscles, stretch perineal during labour without rupture and no need for an episiotomy, and increase the release of internal endorphin which responsible about the relieving of pain. Moreover, the lubricant that is used in perineal massage facilitates the delivery of the fetal head. Thus, perineal massage has been

shown to have an impact on perineal outcomes, according to this study (Smith, 2022).

The finding consists of the socio-demographic characteristics and anthropometric measurements of current pregnancy, as well as the obstetric history during the current pregnancy; second stage characteristics, as well as the newborn characteristics. The perineal integrity after delivery and the relation between the study variables were also included.

The results of the current study, which considered sociodemographic characteristics and anthropometric measurements, revealed that there were no statistically difference among both groups (study and control), which denote the homogeneity of the groups.

The results of the current study are supported with the study done by Fahmy et al., (2021) who studied the “effects of perineal management techniques on labour complications” reported that there were no significant differences among the study women of the three groups regarding the age and level of education. Also, the residence, occupation, and family income of the study women in the three groups did not differ significantly from one another.

Additionally, these finding are matched with the study done by Raja, et al., (2019) who studied that “Effect of perineal massage in the second stage of labour, on the incidence of episiotomy and perineal tears” they concluded that no significant differences among two groups (study and control) regarding their socio demographic characteristics and anthropometric measurements.

The study findings in the same line with the study done by Gaheen and Abo-Hatab (2021), who investigated “the effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labour on perineal outcome in Egypt”. They reported that there was no statistically significant difference among groups regarding their sociodemographic characteristics.

Concerning the anthropometric measurements, the present study revealed that there were no statistically significant differences between groups regarding mean BMI ($P = 0.15$). The results of the current study are supported with the study done by Fahmy et al., (2021) and concluded that there were no significant differences among the study women of the three groups regarding the anthropometric measurements.

Concerning the intensity of perineal pain measured by Visual Analogue Scale (VAS). The findings of the current study showed that there was evident increase in the intensity of perineal pain among control group as compared with study group after the utilization of perineal massage where more than half of women in control group reported severe degree of perineal pain as compared with two women only in the study group with a highly statistically significant difference between both groups ($P=0.001$).

This finding is matched with Gaheen & Abo-Hatab (2021) who studied the “Effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labour on perineal outcomes ” they reported that the application of perineal massage and warm compresses on perineal area during second stage of labour was associated with less perineal pain. Additionally, the results are agreed with Rodriguez et al., (2023), who studied the “Efficacy of perineal massage during the second stage of labour for the prevention of perineal injury: A systematic review and meta-analysis”, they reported that application of perineal massage on perineal area during second stage of labour was associated with less perineal pain rather than control group.

Concerning the progress of labour, the present study findings revealed that most of the studied women in both groups had spontaneous labour with no statistically significant differences among both groups ($P= 0.349$) regarding the progress of labour and there was an evident decrease of labour induction among both groups. These results are in the same line with research done by Monem et al. (2020), who studied “effect of hands-on, hands-off and warm compresses perineal techniques during the 2nd stage of labour on perineal outcomes among primipara with vaginal delivery” showed that uterine massage, warm compresses, and hands-on groups during the second stage of labour clearly reduced labour induction.

These results are in contrast with the study done by Gaheen and Abo-Hatab, 2021, who found that there was a statistically significant difference between the three research groups and the control group in terms of the percentage of women who had progressed labour.

Concerning the duration of the second stage of labour, the present study showed that the study group had the lowest mean duration of labour as compared with the control group with highly statistically significant difference among both groups ($P=0.001$). From the researcher’s point of view, these findings may be explained as perineal lubricated massage contrast to routine hospital care during the second stage of labour had reduced the length of the second stage of labour.

These findings are supported by Rodriguez et al., (2023), who studied “Efficacy of perineal massage during the second stage of labour for the prevention of perineal injury: A systematic review and meta-analysis” who reported that the mean duration of the 2nd stage of labour was significantly shorter in the obstetric gel group than the control group.

These findings are supported by Haryanti, (2019) who investigated “The effect of perineal massage on perinatal status and duration of labour”, and the perineal massage had an impact on the perineal status. From the researcher’s point of view, perineal massage reduces stress and pressure, as

well as increases the perineal muscles relaxation and perineal blood flow.

According to **Ibrahim et al. (2017)**, perineal warm compresses and perineal lubricated massage during the second stage of labour had a shorter duration than routine hospital care, which is in the same line with the study's findings. In addition to, these findings are agreed with **Aquino, et al., (2020)**, who studied the "perineal massage during labour: a systematic review and meta-analysis of randomized controlled trials" and concluded that perineal massage during the second stage of labour reduced the duration of labour. These results are contrasted with **Ashwal et al. (2020)**, who performed a randomized controlled clinical trial to "evaluate the effectiveness of obstetric gel on the length of 2nd stage of labour and perineal integrity" and reported that the mean length of the second stage of labour was equivalent in the study and control groups.

Concerning the mean newborn birth weight, the present study showed that there was no statistically significant difference among either group ($P=0.406$). Additionally, the mean newborn head circumference, the present study showed that there was no statistical difference among both groups ($P=0.592$).

The results of the current study are in accordance with **Goh et al., (2021)**, who studied "combined massage and warm compresses to the perineum during the active second stage of labour in nulliparas" and summarized that the mean newborn weight and head circumference was within the normal range among the intervention groups. These findings were also supported by **Gaheen & Abo-Hatab, (2021)**, who revealed that the mean newborn weight and head circumference was within the normal range among the four study groups. Furthermore, this study agrees with **Rodriguez et al., (2023)** who provide that the mean newborn weight and head circumference was within the normal range among the two groups.

Concerning perineal integrity after delivery, the present study findings shows that women who received lubricated massage during the second stage of labour experienced a lower adverse perineal integrity than those who received the routine hospital care. Regarding the perineal trauma the present study findings showed that less than tenth of women in the study group had 1st degree of perineal tear as compared with more than three quarter in the control group had 3rd degree of perineal tear with highly statistically significant difference among the women of both groups ($P=0.001$).

These results are consistent with research by **Christine et al. (2020)** and **Aasheim et al. (2017)**, which examined the "impact of perineal techniques on reducing perineal trauma during the second stage of labour". They found that perineal supportive techniques during the second stage of labour are effective and acceptable techniques in reducing the incidence of perineal trauma and should be a

standardized part of the second stage of perineal care as they improve the outcomes in terms of increasing the incidence of intact perineum and lowering the risk of episiotomy and severe perineal trauma. Additionally, they concluded that perineal massage decreased the third- and fourth-degree perineal tears as compared with the control group. Also, the first-degree tear is the most common tear that occurs during labour among the three groups in this study.

In the same line, **Geranmayeh et al. (2022)** investigated the "impact of perineal massage with Vaseline during the second stage of labour on reducing the incidence of perineal trauma" and they reported that there was an increase in the frequency of spontaneous perineal tears in control group, but none of the tears were classified as third or fourth degree.

The results of this study are corroborated with the study done by **Oglak & Obut (2020)** who investigated the "Effectiveness of perineal massage in the second stage of labour in preventing perineal trauma" and they concluded that perineal massage has a significant reduction in the rate of perineal trauma in nulliparous women. As compared with the control group, and the intact perineum rates were noticeably higher in the massage group. In the same line, **Mohamed et al., (2019)** performed "a comparative study between two perineal management techniques during the second stage of labour for reducing the incidence of perineal trauma" and found that the use of perineal massage during the expulsive period reduce the occurrence of perineal laceration. These results support the use of perineal massage technique by trained birth attendants. The study findings agreed with **Gaheen & Abo-Hatab (2021)** who revealed that the first-degree perineal tear was the most common among the control group.

These findings come in contrast with **Ibrahim et al., (2017)** who revealed that the second-degree perineal tear is the most common tear that occurs during labour among the three groups. From the total parturient experienced perineal tears, second-degree tears occurred in less than one-third of the warm compresses group women, and less than one-quarter in the lubricated massage group, compared to more than half in the control group. Moreover, two cases were only detected in the control group with third-degree tear and no fourth-degree tear was detected among the three groups. From the researcher's point of view, perineal tears may occur due to other causes such as duration of second stage, fetus weight, and difficulty of second stage of labour. The findings of the current study are contradicted of the study done by **Gimovsky and Berghella (2022)** who investigate that "evidence-based labor management: second stage of labour" and found that there was high level evidence that intrapartum perineal massage or application of warm compresses or using hands off in the second stage of labor does not improve the perineal outcomes.

Concerning the incidence of episiotomy, the present study revealed that the prevalence of episiotomy was significantly lower in the study group as compared with the control group, which revealed that more than one third of the women in the study group had episiotomy as compared with about half of women in the control group with statistically significance difference ($P=0.04$). This might be related to perineal massage during the second stage of labour increases the blood flow, softens the perineal tissues, and makes it more flexible. Massage therapy has several advantages, including reduction of stress and pressure, enhancement of blood circulation and relief of pain. Furthermore, since the perineal muscles surrounding the vaginal orifice are stretched, they are less likely to experience damage.

The finding of the present study was consistent with the finding of the study conducted by **Demirel and Golbasi (2021)** who studied the “effect of perineal massage on the rate of episiotomy and perineal tearing” they found that the application of perineal massage during active labour decreased the frequency of episiotomy procedure. So, the perineal massage could be an effective way to preserve an intact perineum in labour. Similarly, **Chen et al., (2022)** reported that the perineal massage before labour decreased the rate of perineal stitches in primiparous women.

In contradiction with the present study finding, **Botelho (2017)** who studied the “effect of perineal massage on the incidence of episiotomy and perineal laceration” found that perineum massage with lubricant did not decrease the incidence of episiotomy and perineal tears. So, perineal massage with a sterile lubricant did not provide any apparent and significant advantage or disadvantage in reducing perineal trauma and episiotomy. Also, **Biju et al., (2020)** did not observe a difference in episiotomy rate between the study and control groups. The findings are not consistent with a study done by **Ibrahim et al., (2017)** which revealed that, using perineal warm compresses or perineal lubricated massage in second stage of labour did not significantly reduce the incidence of spontaneous perineal trauma or episiotomy when compared to a routine hospital care group. This might be due to the presence of fetal macrosomia, instrumental birth, or massage during pregnancy.

Results revealed that the parity as a predictor variable might affect the incidence of perineal tear with statistically significant difference among the women of both groups ($P=0.001$) and ($R=0.60$). These findings supported with **Chakwera et al., (2022)** who studied “the clinical characteristics of perineal tears: A study carried out on 14 pregnant women in a tertiary center” and founded that about three-quarters of the primiparous women were affected by perineal tears.

The findings of this study are in accordance with **Hukubun (2021)** who examined “the relationship between age, parity, and birth weight with the

degree of perineal rupture in the Rsud Jayapura hospital” and reported that lower parity and higher birth weight increase the incidence of perineal rupture and tears. In the same line, **Jansson et al., (2020)**, studied that the “risk factors for perineal and vaginal tears in primiparous women the prospective cohort study” which concluded that the primiparous women were affected by perineal tears.

5. Conclusion:

Regarding the present study results, it can be concluded that the Applying of perineal massage had effectively reduced the perineal tears, the incidence of episiotomy extension, perineum pain intensity, and duration of the second stage of labour compared to who do not receive perineal massage, with highly statistically significance difference among both groups. This finding supports the first and second research hypothesis.

6. Recommendations

According to the study's findings, the following were recommended:

- 1) Applying perineal massage technique in hospital for to the parturient women to reduce the complications of episiotomy, perineal tears and decrease perineal pain and the length of second stage of labour.
- 2) Maternity nurses should be trained for perineal massage technique to apple to apply it in labour unit.
- 3) Increase women awareness about the importance of the perineal massage to facilitate labour and improve maternal outcomes.
- 4) Further studies are also recommended:
 - Assessment of laboring women's satisfaction with the use of perineal massage for management of second stage of labour.
 - Replication of the present study at different sittings and among different subjects.

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