Effect of Utilizing Perineal Massage, Warm Compresses and Hands on Techniques during the Second Stage of Labor on Perineal Outcomes

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Abstract

Background: Maternal morbidity is one of the most common consequences of perineal tear associated with vaginal birth. Thus, prevention of perineal tear becomes an urgent need. **The aim of this study:** was to evaluate the effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labor on perineal outcomes. **Subjects and Method:** A convenient sample of (120 parturient women) were selected from labor units in obstetric departments at Tanta university and El-Menshawy hospitals and were divided into four groups (three study groups and one control group). **Four tools** were used for data collection; **Tool I, Structured interview schedule;** it included two parts. **Part 1:** Socio-demographic characteristics. **Part 2:** Reproductive history. **Tool II: Visual Analogue Scale (VAS). Tool III: A Modified Behavioral Pain Scale (MBPS). Tool IV: Assessment of second stage and perineal outcomes. Results:** The results of the present study revealed that perineal pain intensity and associated behavioral responses as well as perineal tear had significantly reduced among women to whom lubricated massage, warm compresses and hands on techniques were applied compared to the control group. **Conclusion and recommendations:** it can be concluded that the use of perineal supportive techniques were effective in improving perineal outcomes which was highly significant among lubricated perineal massage group. So, in-service training programs should be implemented for maternity nurses regarding the applications and benefits of perineal lubricated massage, warm compresses and hands on techniques during the second stage of labor to improve perineal outcomes.

Keyword: Warm compresses, perineal massage, hands on technique, perineal outcomes.

Introduction

Labor is a series of events that take place in the genital organs to expel the viable products of conception (fetus, placenta and membranes) out of the uterus through the vagina. Generally, the labor process is divided into four stages**; first, second, third and the fourth stage** [(1)]. Second stage of labor is considered to be the peak of the birthing process; it refers to the period elapses between the onset of full cervical dilatation, effacement and delivery of the fetus. This stage is the most dangerous time that needs appropriate nursing intervention based on evidence based nursing practice to prevent continuous perineal pain associated with perineal tear [(2,3)].

Perineal tear is an extremely common and expected complication of vaginal birth that results from any perineal injury during childbirth. It may happen as a spontaneous tear due to pressure of fetal presenting part on the perineum during vaginal delivery. Worldwide, more than 53-89% of women during childbirth experience different degrees of perineal tear especially among primipara women. According to a study conducted in Egypt (2016) showed that 43% of the study sample had peineal tear associated with severe perineal pain following vaginal delivery [(4, 5)].

Perineal pain is the worst pain that any woman may endure in her life especially among primipara women. It may be associated with many complications such as; insomnia, anxiety, delays in mother-neonate bonding and failure of the woman to have a favorable position for breastfeeding. In addition, this pain interferes with mothers' ability to care for their neonates, and negatively impact on the sexual intercourse. The prevalence of perineal pain has been reported as 92% one day after childbirth [(6,7)].

Perineal tear and pain are complex interplay between different predisposing factors such as; old or young age parturient women, primiparity, abnormal presentations, macrosomic fetus, instrumental delivery, precipitated labor, previous episiotomy especially median type, previous perineal trauma and undue fundal pressure during 2nd stage of labor[(8)].

Perineal tear can be classified according to its severity into four degrees; the first-degree of tear occurs spontaneously in the perineal skin, the second- degree consists of the perineal muscles and skin, while the third-degree include the anal sphincter complex and the fourth-degree includes anal sphincter complex and anal epithelium. Moreover, previous studies have shown that **perineal tear is** accompanied by various short and long term complications including; rupture of the anal sphincter, urinary and fecal incontinence, recto-vaginal fistula, perineal pain, dyspareunia, and bleeding [(9,10)].

The prevention is much better than treatment. Most of the trials that had been done to prevent perineal tear concluded that there is a positive correlation between perineal muscle elasticity, perineal blood supply, perineal lubrication during the second stage and decreased rate of perineal pain and tear. Maternity nurses can use different non-pharmacological approaches and strategies to prevent perineal tear and pain during the second stage of labor [11, 12].

These strategies includes: perineal muscle exercises, perineal lubrication and massage, hands on (perineal supports) and hands off techniques, cold and warm applications during the second stage of labor. Each one of these strategies may be used alone or in combination with another one. Recent research studies reported that perineal massage during second stage of labor is very effective in relaxing the perineum, reducing perineal pain and preventing laceration through increases elasticity, blood supply to the perineum and the release of internal endorphin (pain reliever) which leads to easier pulling and less pain during childbirth [13,14].

Perineal warm compresses can be used to reduce perineal tear and improve maternal comfort during second stage of labor which lead to vasodilatation; increasing tissues blood supply; assisting tissue stretching as well as facilitating the removal of tissues waste products. In addition, warm sensation is known to make dermal stimulation that decreases the pain perception, induces relaxation and reduces nerve tension [15].

Moreover, hands-on technique used to protect the perineum and prevent perineal tear during the 2nd stage of labor. This technique has been used as a routine midwifery practice for a long time which reduces the speed of birth of the fetal head and allowing the smallest diameter to emerge. Despite the wide use of the previous three techniques in reducing the peineal pain and preventing perineal tear all over the world. In Egypt there is little attention about the effectiveness and applications of these techniques during the second stage of labor [16,17]. So, this study will be conducted to determine the effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labor on perineal outcomes.

Aim of the study: the aim of this study was to evaluate the effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labor on perineal outcomes.

Research Hypothesis: Parturient women who will receive lubricated perineal massage, warm compresses and hands on techniques will experience lower adverse perineal outcomes during the second stage

of labor than those who receive routine hospital care.

Operational Definition: Perineal outcomes in this study refer to the perineal condition after fetal expulsion (intact perineum, episiotomy, tear and perineal pain during the second stage of labor).

Subjects and Method

Study Design: Comparative experimental research design was used to conduct this study.

Setting: The study was conducted at labor units in obstetric departments at: Tanta University Hospital and El-Menshawy Hospital affiliated to the Ministry of Health and Population.

Subjects: A convenient sample of 120 parturient women were selected from the previously mentioned settings according to the following inclusion criteria: age ranged from 20-35 years, gestational age from 37-42 weeks, had a single fetus with cephalic presentation, no history of medical or obstetrical diseases, normal vaginal delivery and willing to participate in the study.

The subjects were divided equally into four groups:

- **Group I (control):** 30 women who received the routine care provided by the hospital.

Study groups:

- **Group II:** 30 parturient women to whom lubricated massage were applied on the perineal area.
- **Group III:** 30 parturient women to whom warm compresses were applied on the perineal area.
- ***Group IV:*** 30 parturient women to whom hands on technique was applied on the perineal area.

Tools of data collection: To achieve the aim of the study. Four tools were used.

Tool (I): A structured interview schedule: This tool was developed by the researchers after reviewing the related recent literature [3]. It was used to collect basic data about women. It consisted of two parts:-

Part 1: Socio demographic data including: age, educational level, occupation, residence, income and family type.

Part 2: Reproductive history including: gestational age, number of gravidity, number of abortion and antenatal follow up visits.

Tool (II): Visual Analogue Scale (VAS): It was originally developed by **Mc Caffery and Pasero (1999)** [18] and adapted by the researchers to be used in this study. It is self-reported device 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 used to assess intensity of perineal pain as follows: Zero (no pain), 1-2 (mild pain), 3-4 (moderate pain), 5-6 (severe pain), 7-8 (very severe) and 9-10 the worst pain.

Tool (III): A Modified Behavioral Pain Scale (MBPS): It is adapted from **Mateo and Krenzischeck (1992)** [19]. It assessed four parameters of behavioral responses to pain: tense muscles (relaxed muscles, slightly tense, moderate tense and severe tense), restlessness (quiet, slightly restless, moderate restless and very restless), grimacing (no grimacing, some grimacing, moderate grimacing and constant grimacing), and sound (normal sound, groans/moans, groans/moans loudly and cry out or sobs).

Tool (IV): Assessment of second stage and perineal outcomes: it was adapted from

Ibrahim H etal., (2017) [20] that included two main parts:

Part 1: Second stage and newborn characteristics as: progress of labor, duration (min), need for pain relief measures, newborn birth weight (kg) and also Apgar score at one and five minutes.

Part 2: Perineal outcomes assessment sheet: It incorporated perineal condition after labor (intact, episiotomy, or tear) region and degree of perineal tear, and the need to repair.

Method

The study was implemented according to the following steps:

1. **Administrative approval:**

Official permission was obtained from the responsible authority before conducting this study through official letters from Faculty of Nursing Tanta University after clarifying the purpose of the study directed tohospitals directors of obstetric departments at Tanta University and El-Menshawy hospitals to obtain their approval and cooperation for carrying out the study.

2. **Tools development**:

- Tool I was developed and used by the researchers after extensive review of recent and relevant literature [3].
- It was tested for its reliability by test-retest technique.
- The content validity of the developed tool was tested by a jury of five experts in the field.
- Tool II, Tool III and Tool IV were adapted, necessary modifications were done; then these tools were translated into Arabic language.

- **Ethical consideration:**

An informed written consent was obtained from all the study participants after explaining the purpose of the study. The researchers were assured that the nature of the study did not cause any harm and /or pain for the entire sample. Also, confidentiality and privacy was put into consideration regarding the data collected and the participants' rights to withdraw from the study at any time.

Pilot study:

After development of the tools, a pilot study was carried out on 10% of the total sample (12) laboring women who were excluded from the main study sample (3 from each group). This pilot study was conducted one month before the data collection.

The purposes of the pilot study were to:

- Test the feasibility and applicability of the tools, for the purpose of modification and clarification, to ensure the relevance and content validity of the tools, estimate the time needed to complete the tools and to detect any problem that might interfere with data collection.

Results of the pilot study:

After conducting the pilot study, it was found that:

- The tools were clear, applicable, relevant and valid. No problems that interfere with the process of data collection were detected. Following the pilot study the tools were became ready for use.

Data collection:

- Collection of data covered a period of six months from the beginning of (March 2021 to June 2021) from Tanta University and El- Menshawy hospitals. The researchers were attended the places of data collection three days per week at the (morning, afternoon, and night shifts) until the predetermined sample was collected. The researchers started with the ***group I*** (women who received the routine hospital care) to avoid contamination of the sample.

The study was carried out in four phases:

a. Assessment and planning phase:

The assessment was done during the first stage of labor. The researchers had interviewed with every woman from each group individually, greeted her respectfully with kindness to gain her cooperation and introduced themself to each woman, explained the aim of the study and the time needed for data collection as well as take the participants oral and written consent. Then, the researchers prepared a container that included papers by names of the different perineal supportive techniques, and then each woman of the study groups selected the perineal technique randomly

that she will receive. After that, the researchers asked the woman questions in Arabic language and recorded the answers in the pre developed tool I (***A structured interview schedule part 1 and 2***). This interview had taken15 minutes.

b. Implementation phase:

The selected protective perineal technique was implemented by the researchers for each parturient woman among the intervention groups during the second stage of labor as follows:

- **Group I (Control)**: The women received the routine care provided by the hospital where the physician makes gentle pressure on the lower wall of the vagina using both the index and the middle fingers till crowning occur. The head flexion is also maintained during its expulsion.
- **Group II (Lubricated massage technique):** in which the researchers put five milliliters of KY gel (water-soluble lubricant) on the two index and middle fingers, then began to massage the perineum in U shape reciprocal movement. Five milliliters KY gel was introduced also inside the vagina with massaging of the vaginal wall toward the rectum up and down. The massaging process was intermittent through all the duration of the second stage even during the period of contraction and at crowning. The interval between messaging sessions was 5 minutes.
- **Group III (Warm compresses technique):** in which the researchers applied warm compresses on the parturients' perineum and external genitalia as well as holding it continuously with gloved hands during and between pushes.
- **Group IV (Hands on technique)**: at crowning of fetal head the researchers used the index and middle fingers of the left hand and placed on the fetal occiput to maintain the flexion of fetal head and the right hand placed on the perineum with thumb and index fingers forming a U shape so expulsion is controlled. Once the anterior shoulder is delivered, gentle traction is applied upward to facilitate delivery of the posterior shoulder. After both shoulders have been delivered, the researchers were removed the right hand from the posterior perineum and supports the fetal neck with one hand, while supporting the remainder of the body with the other hand.

c. Evaluation phase:

- The researchers used **Tool II and Tool III** two times first at complete cervical dilatation before intervention as well as 15 minutes after the intervention during the 2nd stage of labor for assessing

intensity of pernieal pain and woman's behavioral responses to perineal pain.

- The researchers used **Tool IV part 1** during second stage of labor for assessing the progress of labor, duration (min), need for pain relief measures, newborn' birth weight (kg) and also Apgar score at one and five minutes.
- At the end of the second stage of labor the four groups assessed by the researchers for the presence of genital tract tear and lacerations, region and degree of tear using **Tool IV part 2.**
- Comparison between the four groups was done to determine which technique had positive effect during the second stage of labor on perineal outcomes (perineal tear and pain).

Results

Table (1): Shows the socio-demographic characteristics of the studied women. It was noticed that the mean age of group I, group II, group III and group IV were (25.03±2.40, 23.90±1.32, 24.40±1.81 and 25.90±1.32 respectively), It was also, observed that nearly two thirds (63.3%) of group I, group III and group IV corresponding to more than half (56.7%) of group II were housewives with no statistically significant difference between the four groups (X^2 = 0.374, P = 0.829).

As regard to the residence, it was demonstrated that (73.3%) of group I and group IV corresponding to (56.7% and 60.0%) of group II and group III respectively were born in rural areas. Also, it was recorded that nearly half (46.7%) of group II, III and group IV had preparatory education corresponding to two fifth (40.0%) of group I with no statistically significant difference between the four groups (X^2 = 6.947, P = 0.326).

Regarding the income of the studied women it was clear that (80.0%) of group II and III corresponding to two thirds (66.7%) of the group I and IV had enough income with no statistically significant difference between the three groups (X^2 =4.013, P= 0.236). Furthermore, it was noticed that more than half (56.7%) of group I, III and IV corresponding to most (90.0 %) of group II were living in nuclear family with a statistically significant difference between the four groups (X^2 = 11.100, P = 0.004*).

Table (2): Illustrates the reproductive history of the studied women. It was observed that the mean gestational age was (39.43±1.01, 39.13±1.10, 39.43±1.01 and 39.00±1.31 respectively) among group I, II, III and group IV with no statistically significant difference between the four groups (F = 1.120, P = 0.331). It was evident that (76.7 % and 73.3 %

respectively) of group I and group III corresponding to the most (93.3 % and 96.7% respectively) of group II and IV were primigravida and had no abortion without statistically significant difference between the four groups (X^2 = 4.649 and 0.310, P= 0.325, 0.855 respectively).

Regarding, the antenatal booking, it was evident that half (50 %) of group II and III corresponding to (40% and 66.7% respectively) of group I and IV had their first antenatal visit at the third trimester while half (50.0%) of group I and III were received their antenatal follow up at governmental hospitals compared to (60% and50.0% respectively) of group II and IV were received their antenatal follow up at the maternal and child health centers (MCH). The table also demonstrated that (53.3%, 90.0%, 56.7% and 60% respectively) of group I, II, III and group IV had less than 4 antenatal visits with a statistically significant difference between the four groups (X^2 =17.603, P=0.007*).

Figure (1): Illustrates the percent distribution of the parturient women according to their perineal pain intensity before and 15 minutes after starting the intervention according to Visual Analogue Scale. It was revealed that half (50.0%) of group II and group IV corresponding to (46.7% and 43.7% respectively) of group I and III had reported severe degree of perineal pain before the utilization of perineal supportive techniques with a statistically significant difference between the four groups (χ^2 = 90.020, P=0.000*).

While, there were evident increase in the intensity of perineal pain among group I compared to group II, III and group IV 15 minutes after the utilization of perineal supportive techniques where two fifth (40%) of group I reported very severe degree of perineal pain compared to (0.0%, 0.0%, and 10.0% respectively) among group (II, III and IV) with a statistically significant difference between the four groups (χ^2 = 93.030, P = 0.000*).

Table (3): Shows the percent distribution of the parturient women according to their behavioral responses to perineal pain before and 15 minutes after starting the intervention according to a Modified Behavioral Pain Scale. It was revealed that there were evident increase in the percent of women who had assumed tense body postures, became very restless, had constant frowning and cried out before utilization of perineal supportive techniques among the four groups with no statistically significant difference (X^2 =2.334, 13.3, 1.921, 2. 965 and P = 0. 0433, 0.112, 0.232, 0.117 respectively).

Whereas, 15 minutes after utilization of the perineal supportive techniques there was a significant improvement in women's

behavioral responses to perineal pain among the three study groups that was so evident among group II (43.3%, 43.3%, 43.3% and 33.3 respectively), group III (46.7%, 40%, 40% and 40% respectively) and group IV (50%, 50%, 46.7% and 43.3% respectively) compared to significant increase among group I (83.3%, 80%, 86.7% and 56.7% respectively) of women had assumed tense body postures, became very restless, had constant frowning and cried out with a statistically significant difference between the four groups (X^2 = 83.274, 65.769, 63.566, 77.732 and P= 0.0001*, 0.0001*, 0.0001*, and 0.021* respectively)

Table (4): revealed the percent distribution of parturient women according to their second stage and newborns characteristics. It was obvious that there were increase in the percent of women who had induced labor among group I (33.3%) compared to significant decrease among group II, group III and group IV (3.3% ,3.3% and 6.7%, respectively). Regarding the need for pain relief it was evident that most (83.3%) of group I compared to (20%, 26.7%, and 33.3% respectively) of group II, group III and group IV need for pain relief during 2nd stage of labor with a statistically significant difference (χ^2 =70.499, 0 .002*).

Regarding the mean duration of the second stage of labor/ min, it is evident that group I had the longest duration (68.425 ± 6.710) compared to the other three studied groups (64.760 ± 6.585, 65.150 ± 6.585, and 66.698 ± 6.585 respectively) and this so evident among group II with a statistically significant difference (χ^2 =72.499, 0.002*). Concerning, the mean newborn birth weight, it is evident that it was within the normal range (3.05 ± 0.212, 3.121 ± 0.154, 3.250± 0.506, 3.01 ± 0.282 respectively) among the four groups with no statistically significant difference (χ^2 =1.882, P= 0.154). By this context, as regard Apgar score at 1 and 5 min, it was obvious that Apgar score within the normal range among the majority (96.7%, 93.3% and 93.3% respectively) of group II, group III and group IV compared to (73.3%) among group I with a statistically significant difference (χ^2 =78.526 and P = 0.000*).

Table (5) and Figure (2): represent the percent distribution of the parturient women according to their perineal outcomes after delivery. It was evident that there was an increase in the percent of tear (43.3%) among group I where (20%) of them had perineal tear compared to (3.3%, 10% and 3.3% respectively) among group II, III and group IV. Regarding the degree of perineal tear it was revealed that (53.8%) of group I compared to (3.3%, 10% and 3.3% respectively) of group II, group III and group IV had first degree of perineal tear**.** Furthermore, most (83.3%) of group I require perineal repair compared to (33.3%, 40% and 33.3% respectively) of

group II, group III and group IV with a statistically significant difference (x^2= 12.499, P= 0.002*).

Table (1): Percent distribution of the studied parturient women regarding their socio-demographic characteristics.

Variables	The studied women (N=120)								χ^2	P
	Group I (Control) (N=30)		Group II (Lubricated message) (N=30)		Group III (Warm compress) (N=30)		Group IV (Hands on technique) (N=30)			
	N	%	N	%	N	%	N	%		
Age years:										
Range	20-33		22-28		22-29		22-30			
Mean±SD	25.03±2.40		23.90±1.32		24.40±1.81		25.90±1.32			
F value	2.691									
P	0.073									
Job:										
House wife	19	63.3	17	56.7	19	63.3	19	63.3	0.374	0.829
Employee	11	36.7	13	43.3	11	36.7	11	36.7		
Residence:										
Rural	22	73.3	17	56.7	18	60.0	22	73.3	2.010	0.366
Urban	8	26.7	13	43.3	12	40.0	8	26.7		
Education level:										
Illiterate	1	3.3	0	0	0	0	0	0	6.947	0.326
Primary or preparatory	12	40.0	14	46.7	14	46.7	14	46.7		
Secondary	10	33.3	7	23.3	13	43.3	7	23.3		
University or postgraduate	7	23.4	9	30.0	3	10.0	9	30.0		
Income/month:										
Not enough	10	33.3	6	20.0	6	20.0	10	33.3	4.013	0.236
Enough	20	66.7	24	80.0	24	80.0	20	66.7		
Family type:										
Nuclear family	17	56.7	27	90.0	17	56.7	17	56.7	11.100	0.004*
Extended family	13	43.3	3	10.0	13	43.3	13	43.3		

Table (2): Percent distribution of the studied parturient women regarding their reproductive history.

Variables	The studied women (N=120)								χ^2	P
	Group I (Control) (N=30)		Group II (Lubricated message) (N=30)		Group III (Warm compress) (N=30)		Group IV (Hands on technique) (N=30)			
	N	%	N	%	N	%	N	%		
Gestational age at birth (weeks):										
Range	38.00-41.00		37.00-41.00		38.00-41.00		37.00-41.00			
Mean±SD	39.43±1.01		39.13±1.10		39.43±1.01		39.13±1.10			
F value	**1.120**									
P	**0.331**									
Gravidity:										
Primigravida.	22	73.4	28	93.3	23	76.7	29	96.7		
Two	7	23.3	2	6.7	6	20.0	1	3.3	4.649	0.325
Three	1	3.3	0	0	1	3.3	0	0		
Number of abortions:										
None	22	73.4	28	93.3	23	76.7	29	96.7		
One	7	23.3	2	6.7	6	20.0	1	3.3		
Two	1	3.3	0	0	1	3.3	0	0	0.310	0.855
Ante-natal booking:										
- Time of initial visits:										
First trimester	8	26.7	0	0	0	0	0	0		
Second trimester	10	33.3	15	50.0	15	50.0	10	33.3	1.714	0.788
Third trimester	12	40.0	15	50.0	15	50.0	20	66.7		
- Place of receiving the antenatal follow up:										
Governmental hospital	15	50	0.0	0.0	15	50	0.0	0.0		
Private hospital	10	33.3	10	33.3	11	36.7	9	30	6.373	0.383
Private clinic	5	16.7	2	6.7	4	13.3	5	16.7		
Maternal and child health center (MCH)	0.0	0.0	18	60.0	0.0	0.0	15	50		
- Number of follow up visits:										
< 4	16	53.3	27	90.0	17	56.7	20	66.7	17.603	0.007*
≥4	14	46.7	3	10.0	13	43.3	10	33.3		

***Significant (P<0.05**

X =90.020
P= 0.000*

X =93.030
P= 0.000*

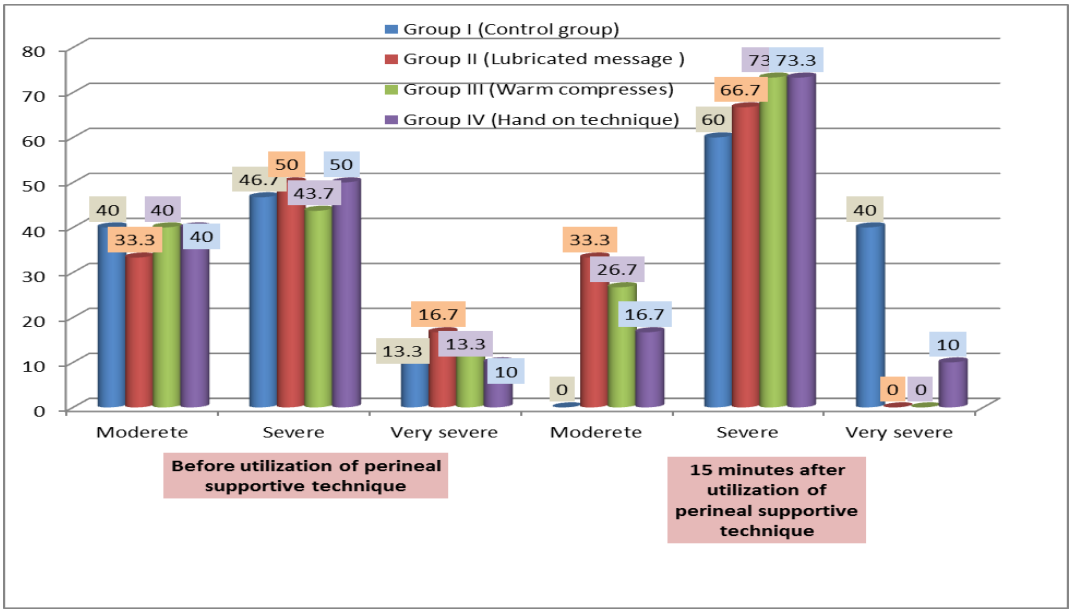

Figure (1): Percent distribution of the studied parturient women according to their perineal pain intensity before and 15 minutes after starting the intervention according to Visual Analogue Scale

Table (3): Percent distribution of the studied parturient women according to their behavioral responses to perineal pain before and 15 minutes after starting the intervention according to A modified Behavioral Pain Scale.

Variables	The studied women (N=120)								χ^2	P
	Group I (Control)		Group II (Lubricated message)		Group III (Warm compress)		Group IV (Hands on technique)			
	N	%	N	%	N	%	N	%		
Before utilization of perineal supportive technique										
Tense muscle:										
-Slightly tense	3	10.0	4	13.3	3	10.0	3	10.0	2.334	0. 0433
-Moderate tense	7	23.3	8	26.7	10	33.3	7	23.3		
-Severe tense	20	66.7	18	60	17	56.7	20	66.7		
Restlessness:										
-Slightly restless	2	6.7	2	6.7	4	13.3	0	0.0		
-Moderate restless	10	33.3	8	26.7	10	33.3	8	26.7	13.3	0.112
-Very restless	18	60.0	20	66.7	16	53.3	22	73.3		
Grimacing:										
-No grimacing	0	0.0	0	0.0	2	6.7	0	0.0	1.921	0.232
-Some grimacing	4	13.3	4	13.3	2	6.7	3	10.0		
-Moderate grimacing	5	16.7	8	26.7	13	43.3	7	23.3		
-Constant grimacing	21	70.0	15	50.0	13	43.3	20	66.7		
Patient sounds:										
-Normal sound	0	0.00	3	10.0	0	0.00	0	00.0		
-Groans/moans	9	30.0	4	13.3	4	13.3	2	6.7	2.965	0.117
-Groans/moans loudly	10	33.3	8	26.7	5	16.7	10	33.3		
-Cry out or sobs	11	36.7	15	50.0	21	70.0	18	60		
15 minutes after utilization of perineal supportive technique										
Tense muscle:										
-Moderate tense	5	16.7	17	56.7	16	53.3	15	50.0	83.274	0.0001*
-Severe tense	25	83.3	13	43.3	14	46.7	15	50.0		
Restlessness:										
-Moderate restless	6	20.0	17	56.7	18	60.0	15	50.0	65.769	0.0001*
-Very restless	24	80.0	13	43.3	12	40.0	15	50.0		
Grimacing:										
-Moderate grimacing	4	13.3	17	56.7	18	60.0	16	53.3	63.566	0.0001*
-Constant grimacing	26	86.7	13	43.3	12	40.0	14	46.7		
Patient sounds:										
-Groans/moans	6	20	11	36.7	6	20	5	16.7	77.732	0.021*
-Groans/moans loudly	7	23.3	9	30.0	12	40.0	12	40.0		
-Cry out or sobs	17	56.7	10	33.3	12	40.0	13	43.3		

Table (4): Percent distribution of the studied parturient women according to their second stage and newborns characteristics

Variables	The studied women (N=120)								χ^2	P
	Group I (Control) (N=30)		Group II (Lubricated message) (N=30)		Group III (N=30) (Warm compress)		Group IV (Hands on technique) (N=30)			
	N	%	N	%	N	%	N	%		
Progress of labor:										
Spontaneous	20	66.7	29	96.7	29	96.7	28	93.3		
Induced	10	33.3	1	3.3	1	3.3	2	6.7	78.526	0.000*
Need for pain relief										
Yes	25	83.3	6	20.0	8	26.7	10	33.3	70.499	0 .002*
No	5	16.7	24	80.0	22	73.3	20	66.7		
Duration (min)										
Mean ± SD	68.425 ± 6.710		64.760 ± 6.585		65.150 ± 6.585		66.698 ± 6.585		72.499	0.002*
Baby birth weight (g)										
Mean ± SD	3.05 ± 0.212		3.121 ± 0.154		3.250± 0.506		3.01 ± 0.282		1.882	0.154
Apgar score at 1 and 5 min										
Normal	22	73.3	29	96.7	28	93.3	28	93.3	78.526	0.000*
Abnormal	8	26.7	1	3.3	2	6.7	2	6.7		

Table (5): Percent distribution of the studied parturient women according to their perineal outcomes after intervention.

Variables	The studied women (N=120)								χ^2	P
	Group I (Control) (N=30)		Group II (Lubricated message) (N=30)		Group III (Warm compress) (N=30)		Group IV (Hands on technique) (N=30)			
	N	%	N	%	N	%	N	%		
Perineal condition										
-Intact	5	16.7	20	66.7	18	60.0	20	66.7		
-Episiotomy	12	40	9	30.0	9	30.0	9	30.0	14.387	0.001*
-Tear	13	43.3	1	3.3	3	10.0	1	3.3		
Sites of tear	N=13		N=1		N=3		N=1			
Vaginal tear	5	16.7	0	0	0	0	0	0		
Labial tear	2	6.7	0	0	0	0	0	0	13.303	0.001*
Perineal tear	6	20.0	1	3.3	3	10.0	1	3.3		
Degrees of perineal tear										
-First	7	53.8	1	3.3	3	10.0	1	3.3	11.100	0.004*
-Second	4	30.8	0	0.0	0	0.0	0	0.0		
-Third	2	15.4	0	0.0	0	0.0	0	0		
Need to repair										
-Yes	25	83.3	10	33..3	12	40.0	10	33..3	12.499	0.002*
-No	5	16.7	20	66.7	18	60.0	20	66.7		

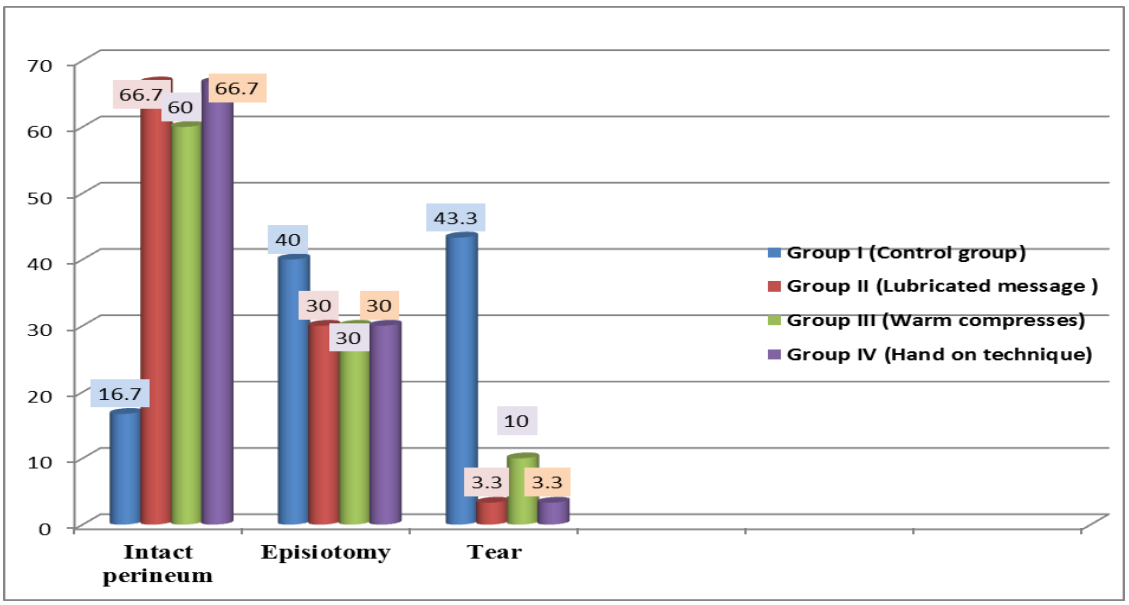

Figure (2): Percent distribution of the studied parturient women according to their perineal condition after intervention.

Discussion

Perineal pain and tear are common complications for vaginal birth that negatively impact on maternal physical and psychological health. So, prevention of perineal tear is an urgent need, midwives have a crucial role in its prevention using different non pharmacological techniques. Thus this study has shed some lights on the effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labor on perineal outcomes [13].

The findings of the present study declared that the study subjects of the four groups were matching in nearly most of the aspects of their socio- demographic characteristics and their reproductive history with no statistically significant difference. This matching is useful in limiting the extraneous variables which may interfere with the effect of utilizing perineal massage, warm compresses and hands on techniques during the second stage of labor on perineal outcomes. This finding was in line with **Ibrahim H etal., (2017)** [20] they investigated "the effect of warm compresses versus lubricated massage during the second stage of labor on perineal outcomes among primiparous women" and **Abdel Monem A etal. (2020)** [21] they studied "the effect of hands-on, hands-off and warm compresses perineal techniques during the 2nd stage of labor on perineal outcomes among primiparae with vaginal delivery". They reported that the study subjects of their groups (study and control) were homogenous in their socio-demographic characteristics and reproductive history with no statistically significant difference.

Concerning, the intensity of perineal pain measured by Visual Analogue Scale (VAS). The findings of the current study reported that there were evident increase in the intensity of perineal pain among group I compared to group II, III and group IV at 15 minutes after the utilization of perineal supportive techniques where one third of group I reported very severe degree of perineal pain compared to none of group II, III and group IV with a statistically significant difference between the four groups. This findings was compatible with **Türkmen H etal., (2020)**[22] who studied "the Effect of perineal warm application on perineal pain, perineal integrity, and postpartum comfort in the 2nd stage of labor: randomized clinical trial", they reported that the application of warm compresses on perineal area during second stage of labor was associated with less perineal pain.

The findings of the present study are also supported by **Vaziri F etal., (2014)** [23] who investigated "the effects of warm

perineum compress during the second phase of labour on first- birth outcome. The researchers had concluded that perineal pain severity in the 2nd stage of delivery was decreased significantly in warm compresses group than the control group. This similarity between the present study and previous studies can be explained by the fact that warm compresses increase perineal tissue's blood supply and cause dermal stimulation that decreases pain perception, induces relaxation and reduces nerve tension.

Furthermore, the present study was in accordance with **Karaçam Z etal., (2012)** [24] they investigated "the use of perineal massage in the second stage of labor and follow-up of postpartum perineal outcomes" and summarized that perineal massage was very effective in reducing perineal pain. This agreement between the current study and the above study can be attributed to the therapeutic advantages of perineal massage, such as increased vasodilatation, blood flow, tissue elasticity and reduced perceived pain.

Moreover, the present study is in agreement with **Thomas P and Jayabharathi B (2016)** [25] they studied the "effectiveness of hands off versus hands on techniques on perineal trauma, and perineal pain among parturient mothers" and proved that hands on technique was very effective in reducing perineal pain. The similarity between these studies can be return to the effectiveness of hands on technique on protecting and supporting the perineum and reducing perineal pain.

Regarding parturient women's behavioral responses to perineal pain, the findings of the present study revealed that there was a significant improvement in women's behavioral responses to perineal pain among the three study groups and this so evident among group II compared to a significant increase among group I at 15 minutes after utilization of the perineal supportive techniques with a statistically significant difference. The findings of this study was in agreement with **Essa R and Ismail** N **(2016)** [26] they studied "effect of 2nd stage perineal warm compresses on perineal pain and outcomes among primiparae", and found that the behavioral responses to perineal pain were decreased significantly after the use of warm compresses among the intervention group compared to control group. The findings of the current study aligns with **Ibrahim H etal., (2017)**[20] the researchers concluded that warm compresses and lubricated massage significantly improve the behavioral responses to perineal pain compared to the control group.

As regard to the characteristics of the second stage of labor; it was obvious that

there was a significant decrease in the percent of women who had induced labor and require pain relief among the three study groups compared to the control group with statistically significant difference. This findings was matching with **Abdel Monem A etal., (2020)**[21] they summarized that there was an evident decrease of labor induction among warm compresses and hands on groups and they did not require pain relief during the 2nd stage of labor.

Concerning, the mean duration of the second stage of labor/ min, the current findings revealed that the mean duration of the second stage of labor / min is shorter among the three intervention groups compared to the control group and this is so evident among group II. The results of the present study disagreed with **Ashwal E (2016)** [27] who conducted a randomized controlled clinical trial to "evaluate the effectiveness of obstetric gel on the length of 2nd stage of labor and perineal integrity". They reported that the mean length of the 2nd stage of labor was similar between the study and control groups. From the researcher's point of view, this contradiction may be attributed to the difference in the duration and frequency of application of lubricant perineal massage.

The results of this study also contradict with **Ganji Z et al., (2013)** [28] they conducted a randomized controlled trial to "evaluate the effectiveness of local heat and cold compresses on labor pain and labor outcomes", and reported that application of a warm towel on perineal area did not make any difference in the length of the 2nd stage of labor. Again, the findings of the present study disagree with the **Foroughipour A et al., (2011)** [29] they reported that there was no significantly difference between the hands-off and the hands-on groups regarding the length of the 2nd stage of delivery.

Concerning, the mean newborn birth weight and Apgar score at 1 and 5 minutes. The results of this study reported that the mean newborn weight and Apgar score were within normal range among the four study groups. This study is in accordance with **Goh Y et al., (2020)** [30] they studied "combined massage and warm compress to the perineum during active second stage of labor in nulliparas". The researchers summarized that the mean newborn weight and Apgar score were within the normal range among the intervention groups.

Regarding perineal outcomes after delivery. The findings of the current study founded that there was an evident increase in the percent of tear among group I (the control) compared to a significant decrease among group II, III and group IV. The

results are supported by **Modoor S., etal., (2021)** [31] they investigated "the effect of warm compresses on perineal tear and pain intensity during the second stage of labor" and reported that the experimental (warm compresses group) had lower degrees of perineal tear than the control group.

This study findings also goes in line with Demirel G., and Golbasi Z (2015) [32] They studied "the effects of perineal massage during active labor on the frequency of episiotomy and perineal tearing" and declared that perineal massage was very effective in reducing perineal tear. Furthermore this study is supported by **Rozita R etal., (2014)** [33] they studied "a comparison of the ‘‘hands-off’’ and ‘‘hands-on’’ methods to reduce perineal lacerations" and reported that hands on technique was very effective in reducing the incidence of perineal lacerations.

Regarding the degree of perineal tear it was revealed that first degree perineal tear was the most common among the control group**.** This finding is supported by **Rozita R et al., (2014)** [33] who reported that more than half of the control group had first degree perineal tear. Furthermore, most of the control group require perineal repair, this finding also goes in line with **Goma L., etal., (2020)**[34]. They evaluated the "effect of utilization hands on versus off method during delivery of fetal head on the occurrence of perineal tear". The researchers founded that more than half of the study samples require repair for perineal tear.

Conclusion: According to the findings of the present study, it can be concluded that the use of perineal supportive techniques including (lubricated massage, warm compress and hands on) were effective in reducing the intensity of perineal pain and tear as well as improving maternal behavioral responses to perineal pain. This was highly significant among lubricated perineal massage group.

Recommendations: Based on the findings of this study, the following recommendations are suggested:

- In-service training programs should be implemented for maternity nurses regarding the applications and benefits of warm compresses, perineal lubricated massage and hands on techniques during the second stage of labor to improve its outcomes.
- Nursing management during the second stage of labor should be provided based on the evidence based practice guidelines.
- Further research could be performed to evaluate the effect of different types of perineal techniques during vaginal birth on maternal and fetal outcomes

as well as assess to women's satisfaction with these techniques.

References

1. Murray SH, Mckinney E, Shaw K, and Jones R. Foundations of Maternal – Newborn and Women's Health Nursing. 7th ed., Louis, Missouri, Elsevier com., 2019; 310.
2. Manderville A. Maternity, Newborn, and Women's Health Nursing. China, Wolters Kluwer com., 2019; 295-300.
3. Dutta DC. Textbook of Obstetrics. 9th ed., London, Jaypee Brothers com., 2018; 108-15.
4. Jansson M, Franzen K, Hiyoshi A, Tegerstedt G, Dahlgren H, and Nilsson K. Risk factors for perineal and vaginal tears in primiparous women. BMC Pregnancy and Childbirth, 2020; 20 (1):749.
5. Mohamed H. Risk factors for birth related perineal trauma among low risk parturient women and nursing implications. IOSR Journal of Nursing and Health Science, 2016; 5 (1): 40-8.
6. Aguiar M, Farley A, Hope L, Amin A, Shah P, and Holland S. Birth-related perineal trauma in low- and middle-income countries: A systematic review and meta-analysis. Maternal and Child Health Journal, 2019; 23:1048–70.
7. Manresa M, Pereda A, Bataller E, Rull C, Ismail K, and Webb S. Incidence of perineal pains and dyspareunia following spontaneous vaginal birth. International Uro gynecological Association Journal, 2019; 88.
8. Lins V, Katz L, Vasconcelos F, Coutinho I, and Amorim M. Factors associated with spontaneous perineal lacerations in deliveries without episiotomy in a university maternity hospital in the city of recife, brazil: a cohort study. The Journal of Maternal-Fetal and Neonatal Medicine, 2019; 32 (18): 3062-7.
9. Meutter L, Heesewijk A, Woerdt-Eltink L, and Leeuw J. Implementation of a perineal support programme for reduction of the incidence of obstetric anal sphincter injuries and the effect of non-compliance. European Journal of Obstetrics and Gynecology and Reproductive Biology 2018, 230 (1): 119-23.
10. Naidu M, Sultan A, and Thakar R. Reducing obstetric anal sphincter injuries using perineal support: our preliminary experience. International Uro gynecological Journal, 2017; 28 (3):381–9.
11. Williams R, Saccone G, and Berghella V. Hands-on versus hands-off techniques for the prevention of perineal trauma during vaginal delivery: a systematic review and meta-

analysis of randomized controlled trials. Journal of Maternal-Fetal and Neonatal Medicine, 2019; 3 (1):1-9.

12. Zare O, Pasha H, and Faramarzi M. Effect of perineal massage on the incidence of episiotomy and perineal laceration. 2014; 6(1), 10-14 http://dx.doi.org/10.4236/health.2014.61003.
13. World Health Organization (WHO). WHO recommendation on techniques for preventing perineal trauma during labor. Geneva: WHO, 2018.
14. Aquino C, Guida M, Saccone G, Cruz Y, Vitagliano A, and Zullo F. Perineal massage during labor. Journal of Maternal-Fetal and Neonatal Medicine, 2020; 33(6):1051-63.
15. Magoga G, Sacconeb G, Al-Kouatly H, Dahlen H, Thornton Ch, and Akbarzadeh M. Warm perineal compresses during the 2nd stage of labor for reducing perineal trauma: A meta-analysis. European Journal of Obstetrics and Gynecology and Reproductive Biology 2019; 240 (2019): 93–8.
16. Yap-Icamina E, Ypil, A, Galbo, P, Tremedal A, and Diaz-Roa L. Comparison on the effect of hands on versus hands off method on perineal trauma and delivery outcome among nulliparous women. Philippine Obstetrical and Gynecological Society, 2014; 38 (2): 1-5.
17. Petrocnik P, and Marshall J. Hands-poised technique: the future technique for perineal management of second stage of labour. Journal of Midwifery, 2015; 31 (2), 274-9.
18. Mc Caffery M, and Pasero C. Numeric pain rating scale. Pain: clinical manual. 2nd ed., Mosby; 1999; 67.
19. Mateo O, and Krenzischeck D. A pilot study to assess the relationship between behavioral manifestations and self-report of pain in post anesthesia care unit patients. Journal of Post Anesthesia Nursing. 1992; 7(1):15-21.
20. Ibrahim H, Elgzar W, and Hassan H. Effect of warm compresses versus lubricated massage during the second stage of labor on perineal outcomess among primiparous women. IOSR Journal of Nursing and Health Science, 2017, 6(4);64-76.
21. Abdel Monem A, El-Habashy M, and Yonis S. Effect of hands-on, hands-off and warm compresses perineal techniques during the 2nd stage of labor on perineal outcomess among primiparae with vaginal delivery. International Journal of Novel Research in Healthcare and Nursing, 2020;7(3);610-12.

22. Türkmen H, Çetinkaya S, Apay E, Karamüftüoğlu D, and Kılıç H. The effect of perineal warm application on perineal pain, perineal integrity, and postpartum comfort in the 2nd stage of labor: Randomized Clinical Trial. Complementary Medical Research Journal, 2020; 27 (1); 1-8.
23. Vaziri F, Farahmand M, Samsami A, Forouhari S, Hadianfard M, and Sayadi M. The effects of warm perineum compress during the second phase of labour on first- birth outcomes. Medical Care Journal, 2014; 11 (1): 28-37.
24. Karaçam Z, Ekmen H and Çalişir H. The use of perineal massage in the second stage of labor and follow-up of postpartum perineal outcomes. International Journal of Health Care for Women, 2012; 33 (8) 697-718.
25. Thomas P, and Jayabharathi B. Effectiveness of hands off versus hands on techniques on perineal trauma, and perineal pain among partiurient. Asian Journal of Pharmacological Clinical Research, 2016; 9 (6):179-83.
26. Essa M, and Ismail A. Effect of 2nd stage perineal warm compresses on perineal pain and outcomes among primiparae. Journal of Nursing Education and Practice, 2016; 6 (4):48-58.
27. Ashwal E, Aviram A, WertheimerA, Krispin E, Kaplan B, and Hiersch L. The impact of obstetric gel on the 2nd stage of labour and perineal integrity: a randomized controlled trial. Journal of Maternnal, Fetal, Neonatal Medical, 2016; 29 (18):3024-29.
28. Ganji Z, Shirvani M, Rezaei-Abhari F, and Danesh M. The effect of intermittent local heat and cold on labour pain and child birth outcomes. Iran Journal of Nursing Midwifery Res. 2013 18(4):298-303.
29. Foroughipour A, Firuzeh F, and Ghahiri A. The effect of perineal control with hands-on and hand-poised methods on perineal trauma and delivery outcomes. Journal of Research Medical Sciences, 2016; 16 (8):1040–6.
30. Goh YP, Tan PC, Hong JG, Sulaiman S, and Omar SZ. Combined massage and warm compress to the perineum during active second stage of labor in nulliparas, A randomized trial. International Journal of Gynecological Obstetric, 2021; 00:1–7. https:// doi.org/10.1002/ijgo.13613.
31. Modoor S, Fouly H, aRawas H. The effect of warm compresses on perineal tear and pain intensity during the second stage of labor. Belitung Nursing Journal, http://doi.org/10.33546j.1452.

32. Demirel G, Golbasi Z. the effects of perineal massage during active labor on the frequency of episiotomy and perineal tearing. International Journal of Gynecology and Obstetrics, 2015; 131, 183–186.
33. Rozita R, Sussan S, Huak C, and Sharif N. A comparison of the ‘‘hands-off’’ and ‘‘hands-On’’ methods to reduce perineal lacerations: A Randomised Clinical Trial. The Journal of Obstetrics and Gynecology of India, 2014; 64 (6):425–9.
34. Goma L, Khedr N, and Gouda A. Effect of utilization hands on versus off method during delivery of fetal head on occurrence of perineal tear, Mansoura Nursing Journal, 2020;7(2):23.