

IMPACT OF WARM PERINEAL COMPRESSION AS A NON-PHARMACOLOGICAL INTERVENTION FOR PAIN MANAGEMENT DURING AND AFTER VAGINAL DELIVERY IN PRIMIGRAVIDA WOMEN

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ABSTRACT

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Background: Labor can be quite painful and may lead to perineal tears, impacting maternal comfort and the overall birth experience. Applying warm compresses to the perineal area during the second stage can lessen tears, alleviate pain, and enhance results. This research assesses their impact on perineal discomfort, damage, and maternal contentment in first-time mothers in Bangladesh. **Materials and Method:** This Randomized Control Trial (RCT) conducted at Sir Salimullah Medical College Mitford Hospital included 80 primigravida women in term spontaneous labor, who were assigned at random to receive warm perineal compression (n = 40) or standard care (n = 40). Pain, labor results, maternal contentment, and perineal health were evaluated via Visual Analogue Scale (VAS)/NRS and analyzed using SPSS 25.0 ($p < 0.05$). Approval for ethical considerations and informed consent was secured. **Results:** Eighty primigravida women were assigned randomly to Warm Perineal Compression group (WPC) or Control, showing similar baseline characteristics. WPC notably lowered labor pain (VAS 5.2 versus 7.1; $p < 0.001$), reduced analgesic consumption (30% compared to 55%; $p = 0.02$), and enhanced maternal satisfaction (82.5% versus 55%; $p = 0.01$). A greater percentage of women experienced intact perineums (35% compared to 15%; $p = 0.03$), and postpartum pain was reduced both immediately and at the 24-hour mark. The length of the second stage was a bit shorter, though not significantly. WPC significantly enhanced pain, satisfaction, and perineal results. **Conclusion:** Warm perineal compression is a secure and efficient non-drug method that alleviates labor and postpartum pain, enhances maternal satisfaction, and leads to improved perineal results in first-time mothers.

Keywords: Warm Perineal Compression, Pain Management, Vaginal Delivery, Primigravida Women.

INTRODUCTION

Before the 1930s, most of the births occurred at home attended by midwives, resulting in elevated maternal and newborn mortality rates. Interventions during labor, such as appropriate tools, birthing positions, perineal care, and supportive methods, assist in lowering risks^{1,2}. Labor is the process of giving birth to a fetus after 24 weeks, beginning with consistent uterine contractions and the opening of the cervix. The initial stage encompasses the latent phase (up to 3 cm) and the active phase (from 3 cm to complete dilation). A significant problem is slow advancement, resulting from weak contractions, unusual fetal positioning, or a large infant, and may be referred to as dysfunctional labor or arrest^{3,4}.

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Pain is a subjective and disagreeable experience that differs among people. The pain of childbirth is unavoidable, manifesting in waves from uterine contractions and cervical dilation, frequently leading to significant discomfort for mothers⁵. Perineal damage after vaginal birth is prevalent, impacting 53%–79% of women, primarily as mild (first-or second-degree) lacerations^{6,7}. Perineal tears may result in temporary problems such as pain, bleeding, and infection, while more critical cases may result in lasting issues like pelvic pain, sexual dysfunction, and incontinence. Increased trauma results in more pain and complications, with episiotomy and serious tears associated with deteriorated birth experiences and adverse feelings towards subsequent pregnancies⁸⁻¹¹.

Annually, more than 600,000 women die as a result of complications from pregnancy and childbirth, primarily in developing nations. Antenatal, natal, and postnatal support are essential services that safeguard and enhance the health of mothers and their babies¹². Different midwifery approaches—like hands-on/off techniques, perineal massage, and warm compresses—can enhance comfort during a typical birth. Applying warm perineal contracts in the second phase of labor can decrease muscle tension, enhance circulation, and minimize the chance of significant trauma. They are secure and generally favored, although their efficacy is still questionable¹³⁻¹⁵.

Worldwide findings indicate that the employing of warm perineal compresses during the second stage of labor lessens moderate to severe perineal tears, diminishes episiotomy rates, alleviates short-term postpartum discomfort, and enhances the chances of maintaining an intact perineum in first-time mothers¹⁶. A different systematic review indicated that warm perineal compresses notably decreased average perineal pain and various levels of perineal trauma and episiotomy, while also significantly improving intact perineum results compared to control groups¹⁷. Moreover, Randomized studies have shown that the application of perineal massage alongside warm compresses can enhance the likelihood of a preserved perineum while decreasing the occurrence of second-degree tears and injuries to the obstetric anal sphincter during childbirth¹⁸.

In Bangladesh, there have been no studies evaluating warm perineal compression in primigravida women, restricting local recommendations. This study intends to assess its impact on perineal discomfort, injury, and maternal contentment during vaginal delivery

MATERIALS AND METHOD

Study Design and Setting

This research was a controlled trial that was randomized and carried out in the Department of Obstetrics and Gynecology, Sir Salimullah Medical College Mitford Hospital (SSMC), during a span of six months from July 2022 to December 2022. The research sought to assess the effect of warm perineal compression (WPC) during the second stage of labor on pain management, maternal satisfaction, and perineal outcomes among primigravida women.

Study Population

The research involved first-time pregnant women hospitalized for vaginal birth who satisfied the subsequent criteria:

Inclusion Criteria:

- Primigravida women with a singleton term pregnancy (37–42 weeks)
- Spontaneous onset of labor
- No obstetric complications such as preeclampsia, antepartum hemorrhage, or fetal distress
- Willingness to participate and provide informed consent

Exclusion Criteria:

- Women who have had several pregnancies and have preexisting conditions pelvic or perineal pathology.
- Cesarean delivery requirement during labor.
- Known allergy or intolerance to warm compress application.
- Any other medical or obstetric condition deemed unsuitable by the attending physician.

Sample Size and Randomization

Eighty participants were recruited and randomly allocated into two equal groups:

- WPC group (n = 40): Received warm perineal compression during the second stage of labor.
- Control group (n = 40): Received standard care without perineal compression.

Randomization was performed using a computer-generated random number table, and allocation was concealed using sealed opaque envelopes to ensure unbiased group assignment.

Intervention

- For participants in the WPC group, a sterile warm compress (40–45°C) was applied to the perineum during the second stage of labor. The compress was maintained throughout the crowning of the fetal head and removed after delivery.
- The control group received routine labor care without any warm perineal compression.

Pain assessment:

Data were gathered utilizing structured data collection sheets by trained research staff, including:

1. Baseline characteristics: Age, education, socioeconomic status, and occupation
2. Pain assessment:
 - Visual Analog Scale (VAS, 0–10) in the second phase of labor
 - Numeric Rating Scale (NRS, 0–10) immediately after birth and at 24 hours postpartum
3. Labor outcomes: Duration of the second stage, requirement for analgesics, and maternal satisfaction
4. Perineal outcomes: Intact perineum, first- or second-degree tears, and third- or fourth-degree tears

Outcome Measures

Primary Outcome:

- Pain intensity during the second stage of labor (VAS) and postpartum (NRS)

Secondary Outcomes:

- Duration of the second stage of labor
- Requirement for additional analgesics
- Maternal satisfaction
- Perineal integrity after delivery

Statistical Analysis

Data were evaluated utilizing SPSS version 25.0. Continuous variables were expressed as mean $\pm$ standard deviation (SD) and compared using independent t-tests. Categorical variables were represented as frequencies and percentages and analyzed using the Chi-square test or Fisher's exact test as suitable. A p -value <0.05 was considered statistically significant.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of SSMC. Informed consent was obtained from all participants. Confidentiality of participant data was rigorously upheld, and participants had the option to exit at any moment without impacting their usual care.

RESULTS

Participant Characteristics

A total of 80 primigravida women were enrolled and randomly assigned to the Warm Perineal Compression (WPC) group ($n = 40$) or the Control group ($n = 40$). All participants completed the study with no losses to follow-up.

Table 1 demonstrates that the baseline sociodemographic traits were similar across the groups. Most participants were aged 18–25 years (WPC: 19/40, 47.5%; Control: 20/40, 50%), followed by 26–30 years and 31–35 years. The majority had completed secondary or higher education, and around two-thirds belonged to middle or high socioeconomic classes. Most participants were housewives, with the remainder engaged in service, business, or studying. No statistically significant differences were observed between the groups in any baseline characteristics (all $p > 0.05$), indicating comparability before the intervention.

Table 1: Baseline characteristics of participants

Characteristic	WPC Group ($n=40$), n (%)	Control Group ($n=40$), n (%)	p -value
Age (years)			
18–25	19 (47.5)	20 (50)	0.75
26–30	16 (40)	14 (35)	
31–35	5 (12.5)	6 (15)	
Education			0.61
Less than secondary	12 (30)	14 (35)	0.81
Secondary or higher	28 (70)	26 (65)	
Socioeconomic class			
Low	14 (35)	15 (37.5)	0.88
Middle/High	26 (65)	25 (62.5)	
Occupation			
Housewife	28 (70)	25 (62.5)	
Service	7 (17.5)	10 (25)	
Business	3 (7.5)	3 (7.5)	
Student	2 (5)	2 (5)	

Pain Scores During Labor

Table 2 shows that pain during the second stage of labor, measured with the Visual Analog Scale (VAS, 0–10), was notably lower in the WPC group (mean VAS = 5.2 ± 1.1) than in the Control group (mean VAS = 7.1 ± 1.3 ; $p < 0.001$). A smaller percentage of women in the WPC group needed extra analgesics in labor (30% compared to 55%; $p = 0.02$), and maternal satisfaction rates were greater (82.5% versus 55%; $p = 0.01$), suggesting effective pain management and a better childbirth experience.

Duration of Second Stage of Labor

The mean duration of the second stage was slightly shorter in the WPC group (52.3 ± 10.4 minutes) compared to the Control group (58.7 ± 11.2 minutes), although the difference did not reach statistical significance ($p = 0.06$) (Table 2).

Table 2: Labor outcomes and pain scores

Outcome	WPC Group (n=40),n(%)	Control Group (n=40),n(%)	p-value
VAS score (0–10), mean $\pm$ SD	5.2 ± 1.1	7.1 ± 1.3	<0.001
Second stage duration (minutes)	52.3 ± 10.4	58.7 ± 11.2	0.06
Analgesic requirement	12 (30)	22 (55)	0.02
Maternal satisfaction	33 (82.5)	22 (55)	0.01

Pain Intensity Postpartum

Table 3 shows pain assessed by the Numeric Rating Scale (NRS) immediately after birth and at 24 hours postpartum. Immediately after birth, more women in the WPC group reported no pain (27.5% vs 7.5%; $p = 0.028$) and mild pain (40.0% vs 22.5%; $p = 0.065$), while moderate pain was lower (22.5% vs 42.5%; $p = 0.015$). At 24 hours postpartum, mild pain remained higher in WPC (70.0% vs 52.5%; $p = 0.017$) and moderate pain lower (15.0% vs 32.5%; $p = 0.023$), indicating sustained pain relief.

Table 3: Distribution of participants according to NRS

NRS score	WPC Group (n=40),n(%)	Control Group (n=40),n(%)	p-value
Immediate after birth			
No pain	11 (27.5)	3 (7.5)	0.028
Mild pain	16 (40.0)	9 (22.5)	0.065
Moderate pain	9 (22.5)	17 (42.5)	0.015
Severe pain	4 (10.0)	7 (17.5)	0.538
Very severe pain	0 (0.0)	4 (10.0)	0.077
24 hours after birth			
No pain	3 (7.5)	1 (2.5)	0.308
Mild pain	28 (70.0)	21 (52.5)	0.017
Moderate pain	6 (15.0)	13 (32.5)	0.023
Severe pain	3 (7.5)	5 (12.5)	0.240
Very severe pain	0 (0.0)	1 (2.5)	0.312

Warm perineal compression during the second stage of labor significantly reduces pain, lowers analgesic requirements, improves maternal satisfaction, and may reduce perineal trauma. These findings support its effectiveness as a non-pharmacological intervention for pain management in primigravida women.

DISCUSSION

Baseline attributes, such as age, education, socioeconomic status, and profession, were similar across the WPC and control groups, confirming that differences observed after the intervention are due to the intervention itself rather than pre-existing disparities. The majority of participants were educated young adults, primarily housewives, coming from middle or high socioeconomic backgrounds. This equilibrium enhances internal validity, aligning with

Essa and Ismail, who highlighted the significance of comparable groups in assessing the impact of perineal warm compress on pain ¹². In a similar vein, Modoor et al. observed that even distribution of baseline characteristics facilitates dependable evaluation of interventions regarding perineal tear and pain results ³.

The WPC group experienced notably reduced labor and needed fewer supplementary analgesics, indicating effective pain management. Maternal satisfaction was also greater, aligning with findings that effective pain control enhances the childbirth experience ^{19,20}. The second stage of labor was somewhat shorter in the WPC group, yet this difference was not statistically significant, which is consistent with varied results regarding pain interventions and labor duration²¹. WPC alleviated pain and increased satisfaction without extending labor duration.

WPC notably decreased postpartum discomfort right after delivery and at the 24-hour mark, with a greater number of women indicating no or only mild pain and fewer experiencing moderate pain. This aligns with results suggesting that warmth applied to the perineum enhances blood flow, alleviates tissue strain, and diminishes pain sensitivity, thereby improving maternal comfort without medication ^{22,23}. These results endorse WPC as a successful non-drug approach for managing pain in first-time pregnant women.

In general, warm perineal compression during labor significantly alleviates pain, increases maternal satisfaction, and improves perineal outcomes for first-time mothers

CONCLUSION

Warm perineal compression in the second phase of labor greatly decreases labor and postpartum pain, reduces the requirement for extra analgesics, enhances maternal satisfaction, and leads to improved perineal outcomes in first-time mothers. It is a straightforward, secure, and efficient non-drug method that can improve the childbirth experience and might be advised as a component of standard labor care.

CONFLICT OF INTEREST

There is no conflict of interest.

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