

RESEARCH ARTICLE (ORIGINAL)

Antenatal Perineal Massage for Preventing Perineal Trauma: Randomized Pilot Study

Massagem Perineal Pré-Natal na Prevenção do Trauma Perineal: Estudo Piloto Randomizado

Masaje Perineal Prenatal para la Prevención del Traumatismo Perineal: Estudio Piloto Aleatorizado

Isa Cristina Ricardo Rodrigues Madaleno¹

 <https://orcid.org/0009-0004-3404-9694>

Ana Fernanda Ribeiro Azevedo²

 <https://orcid.org/0000-0002-7617-0917>

Teresa Isaltina Gomes Correia²

 <https://orcid.org/0000-0001-9975-7908>

¹ Polytechnic Institute of Bragança,
Bragança, Portugal

² Research Center for Active Living
and Wellbeing (LiveWell), Polytechnic
Institute of Bragança, Bragança, Portugal

Abstract

Background: Although antenatal perineal massage is reported to reduce trauma, it remains under-researched in Portugal.

Objective: To assess the feasibility, acceptability, and preliminary effect of antenatal perineal massage in preventing perineal trauma among women with normal deliveries and to describe knowledge of this technique.

Methodology: A pilot randomized, controlled study was conducted in primary care. Low-risk pregnant women participated; out of 66 eligible women, 63 were recruited and randomized, with 34 assigned to the intervention group and 29 to the control group. For outcome analysis, 24 women with normal deliveries (12 from each group) were included.

Results: The recruitment rate was 95.5%, and the dropout 6.3%. Despite limited knowledge, adherence to massage reached 72.99%. The intervention group experienced fewer cases of perineal trauma, although this was not statistically significant. Eleven-minute sessions over 5–6 weeks indicated a trend toward reduced trauma.

Conclusion: Antenatal perineal massage was feasible and well received. The findings support the need for larger clinical trials to verify its preventive benefits.

Keywords: massage; perineum; episiotomy; lacerations; nurse midwives

Resumo

Enquadramento: Apesar dos benefícios descritos da massagem perineal pré-natal na redução do trauma, esta permanece pouco explorada no contexto português.

Objetivo: Avaliar a viabilidade, a aceitabilidade e o efeito preliminar da massagem perineal pré-natal na prevenção do trauma perineal em mulheres com parto eutócico e descrever o conhecimento sobre a técnica.

Metodologia: Estudo piloto, randomizado e controlado, realizado nos cuidados primários. As participantes foram grávidas de baixo risco; das 66 elegíveis, 63 foram recrutadas e randomizadas (34 intervenção; 29 controlo); para a análise dos desfechos foram incluídas 24 mulheres com parto eutócico (12 por grupo).

Resultados: A taxa de recrutamento foi de 95,5% e de abandono de 6,3%. Apesar do baixo conhecimento, a adesão à massagem foi de 72,99%. O grupo de intervenção apresentou menor frequência de trauma perineal, sem significância estatística. Sessões de 11 minutos ao longo de 5–6 semanas sugeriram menor trauma.

Conclusão: A massagem perineal pré-natal revelou-se viável e bem aceite. Os resultados apoiam a realização de ensaios clínicos de maior dimensão para confirmação do seu potencial preventivo.

Palavras-chave: massagem; períneo; episiotomia; lacerações; enfermeiros obstétricos

Resumen

Marco contextual: A pesar de los beneficios descritos del masaje perineal prenatal para reducir el traumatismo, esta práctica sigue sin haberse explorado lo suficiente en el contexto portugués.

Objetivo: Evaluar la viabilidad, la aceptabilidad y el efecto preliminar del masaje perineal prenatal en la prevención del traumatismo perineal en mujeres con parto eutócico y describir los conocimientos sobre la técnica.

Metodología: Estudio piloto, aleatorizado y controlado, realizado en atención primaria. Las participantes eran mujeres embarazadas de bajo riesgo; de las 66 elegibles, se seleccionaron y aleatorizaron 63 (34 en el grupo de intervención y 29 en el grupo de control); para el análisis de los resultados se incluyeron 24 mujeres con parto eutócico (12 por grupo).

Resultados: La tasa de selección fue del 95,5 % y la de abandono 6,3 %. A pesar del bajo nivel de conocimientos, la adherencia al masaje fue del 72,99 %. El grupo de intervención presentó una menor frecuencia de traumatismo perineal, sin significación estadística. Las sesiones de 11 minutos a lo largo de 5-6 semanas sugirieron un menor traumatismo.

Conclusión: El masaje perineal prenatal resultó viable y bien aceptado. Los resultados respaldan la realización de ensayos clínicos a mayor escala para confirmar su potencial preventivo.

Palabras clave: masaje; perineo; episiotomía; laceraciones; enfermeras obstétricas

Corresponding author

Isa Cristina Ricardo Rodrigues Madaleno

E-mail: isa.c.rodrigues@hotmail.com

Received: 04.09.26

Accepted: 24.03.26



Escola Superior de
Enfermagem de Coimbra

fct

Fundação
para a Ciência
e a Tecnologia

How to cite this article: Madaleno, I. C., Azevedo, A. F., & Correia, T. I. (2025). Antenatal Perineal Massage for Preventing Perineal Trauma: Randomized Pilot Study. *Revista de Enfermagem Referência*, 6(5), e43015. <https://doi.org/10.12707/RVI25.69.43015>



Introduction

Perineal trauma is one of the most common complications of vaginal delivery, affecting most women and associated with significant morbidity, including persistent perineal pain, dyspareunia, and urinary and fecal incontinence, all of which negatively affect quality of life. It is estimated that approximately 84.3% of women experience some form of perineal trauma after vaginal delivery (Milka et al., 2023). In Portugal, the incidence is high (74.8%), with episiotomy rates of 43.8% (Rodrigues et al., 2019). Antenatal perineal massage is a low-cost, safe preventive technique that can be performed by the pregnant woman herself or by her partner (Royal College of Midwives [RCM] & Royal College of Obstetricians and Gynaecologists [RCOG], 2023). However, in Portugal, the feasibility, acceptability, and impact of this practice remain largely unexplored, and no primary studies have been identified that evaluate its effect on obstetric outcomes or on pregnant women's knowledge of this therapeutic technique. Given the need to identify effective strategies to reduce the impact of perineal trauma, the objective of this study is to assess the feasibility, acceptability, and preliminary effect of antenatal perineal massage, starting at 34 weeks of gestation until delivery, in preventing perineal trauma in women with normal deliveries, and to explore the extent of knowledge about this technique in a district in northern Portugal.

Background

The perineum is the anatomical region between the vulva and the anus, composed of muscles, fascia, and connective tissue. During vaginal delivery, these structures undergo significant stretching. Perineal trauma is defined as loss of perineal integrity and can occur spontaneously from laceration or iatrogenically as a result of an episiotomy. Perineal lacerations are classified into four degrees of increasing severity, with an episiotomy considered a second-degree laceration (Packer & Leeman, 2024). Several factors influence the risk of perineal trauma, including primiparity, fetal macrosomia, head circumference > 35 cm, assisted delivery, advanced maternal age, high body mass index, and maternal lithotomy position during delivery (Rodrigues et al., 2019).

Antenatal perineal massage involves progressively stretching perineal tissues, adjusted to the pregnant woman's tolerance, to promote muscle relaxation and increased blood flow. Regular practice beginning at 34 weeks of gestation has been shown to reduce the need for episiotomy, perineal pain, and the severity of perineal trauma, particularly in women without a history of vaginal delivery (Beckmann & Stock, 2013; Milka et al., 2023). Despite these benefits, clinical trials show considerable heterogeneity in technique, frequency, and duration (Chen et al., 2022).

Research question

What is the feasibility and acceptability of prenatal perineal massage initiated at 34 weeks of gestation and continued until childbirth, as well as its preliminary effect on reducing perineal trauma among women with normal vaginal delivery in a district in northern Portugal? What is the level of knowledge about this technique among this population?

Methodology

An experimental, pilot, randomized study was conducted from June 2024 to February 2025 in the primary health care (PHC) units of a district in northern Portugal. The participants were low-risk pregnant women receiving prenatal care who attended childbirth and parenting preparation (CPP) sessions. The inclusion criteria were: age ≥ 18 years, singleton pregnancy, desire for vaginal delivery, gestational age < 35 weeks at randomization, and understanding of Portuguese, English, or Spanish. Exclusion criteria included unwillingness to perform perineal massage, prior practice of the technique, elective cesarean section, allergy to almond oil, and clinical conditions such as: medical restrictions on sexual intercourse, uterine contractions with a threat of preterm labor, fetal growth restriction, placental abruption, placenta previa, premature rupture of membranes, preeclampsia/eclampsia, vaginal bleeding, vulvar varicose veins, urinary tract infections, or vulvovaginal infections. These criteria were based primarily on the studies included in the systematic review by Milka et al. (2023).

A nonprobability convenience sample was used, consisting of participants from 10 of the 14 PHC units in the district. Recruitment occurred during CPP sessions. Potential participants were identified and invited to participate after a brief informational session on perineal trauma and a detailed explanation of the study. This was followed by an individual meeting to obtain signed informed consent and to perform simple randomization (1:1 ratio), stratified by parity (nulliparous vs. primiparous/multiparous), using a sequence generated by a statistician. Allocation was performed by sequentially opening opaque, numbered, and sealed envelopes, each randomly labeled "Intervention" or "Control," as previously designated by a person unrelated to the study. Recruitment continued until a minimum of 12 participants per group with a normal vaginal delivery suitable for assessment of perineal outcomes was reached, in accordance with methodological recommendations for pilot studies (Kunselman, 2024).

Participants in the intervention group (IG) received an educational session led by the researcher, held between 32 and 34 weeks of gestation, which included an explanation and demonstration of perineal massage using an anatomical model of the female genitalia. They were instructed to perform self-massage and/or partner-assisted

massage daily for 5 to 10 minutes, starting at 34 weeks of gestation until delivery. The study was not blinded, given the nature of the intervention, which required an educational component for its implementation. The massage protocol was based on the recommendations of the RCM and the RCOG (2023). The following were provided: an explanatory brochure, a link to a video tutorial (developed by the researcher), sweet almond oil, and the perineal massage log (Q2). Participants in the control group (CG) did not receive the educational session, followed standard prenatal care, and did not perform perineal massage. During participant follow-up, up to four attempts were made to contact them; those who expressed an intention to withdraw or did not respond after these attempts were considered lost to follow-up. To minimize measurement bias, participants were asked not to share information about the study. The intervention was monitored digitally, with weekly contact to provide support and verify adherence to the protocol. Inadequate adherence due to noncompliance with the protocol was defined as failing to perform the massage at least twice a week for 5 to 10 minutes, from the 34th week until delivery, with a minimum of four sessions.

The data collection involved three questionnaires created by the researcher: one for sociodemographic and clinical-obstetric data and to evaluate knowledge about massage (Q1); a weekly log to document massage practices (Q2); and another to gather outcomes related to childbirth—specifically obstetric, neonatal, and perineal outcomes, including questions on the technique's acceptability (Q3). Acceptability was assessed with three items from Q3; feasibility was measured through recruitment, retention, and dropout rates, as well as adherence to massage practices indicated by Q2 (frequency, average duration, and person performing it); and the preliminary effect was evaluated using perineal outcomes from Q3 (episiotomy and perineal laceration).

Data collection occurred at two time points: during the randomization phase and postpartum. At randomization, Q1 was administered to all participants. Postpartum, between days 3 and 10, the IG was asked to submit Q2 electronically. For Q3, acceptability questions were posed to the IG, and all participants were asked about the position adopted during the expulsive stage, the use of epidural analgesia, and the presence of perineal pain 48 hours postpartum—variables not recorded in the Maternal and Child/Adolescent Health Reports. The remaining variables related to obstetric, neonatal, and perineal outcomes were obtained by reviewing the respective records, which are official clinical documents completed by healthcare professionals. Women with assisted delivery and inadequate adherence (noncompliance with the protocol) were excluded from the outcome analysis. The study was conducted in accordance with the CON-

SORT extension for pilot and feasibility trials (Eldridge et al., 2016).

Statistical analysis was based on descriptive statistics (absolute and relative frequency, mean, standard deviation, minimum, and maximum). For comparisons between groups, Fisher's exact test and the Mann-Whitney *U* test were used. A significance level of $p < 0.05$ was adopted. Statistical analyses were conducted using IBM SPSS Statistics, version 26.0. The study was approved by the Ethics Committee of ULSNE, E.P.E (Opinion No. 8/2023).

Results

Of the 66 eligible participants, 63 (95.5%) were recruited and randomized, with 34 assigned to the IG and 29 to the CG. In the IG, there were 3 losses to follow-up, 5 exclusions due to elective cesarean section, and 2 due to noncompliance with the protocol, leaving 24 participants for assessment of adherence to perineal massage; of these, 12 were excluded from the analysis of perineal outcomes due to assisted delivery. In the CG, there was 1 loss to follow-up and 6 exclusions due to elective cesarean section, resulting in 22 participants, of whom 10 were excluded due to assisted delivery. The dropout rate was 6.3% (4), and the retention rate was 38.1% (Figure 1).

Regarding knowledge of antenatal perineal massage, only 19.05% reported being familiar with it during interviews, on average at 32 weeks of gestation.

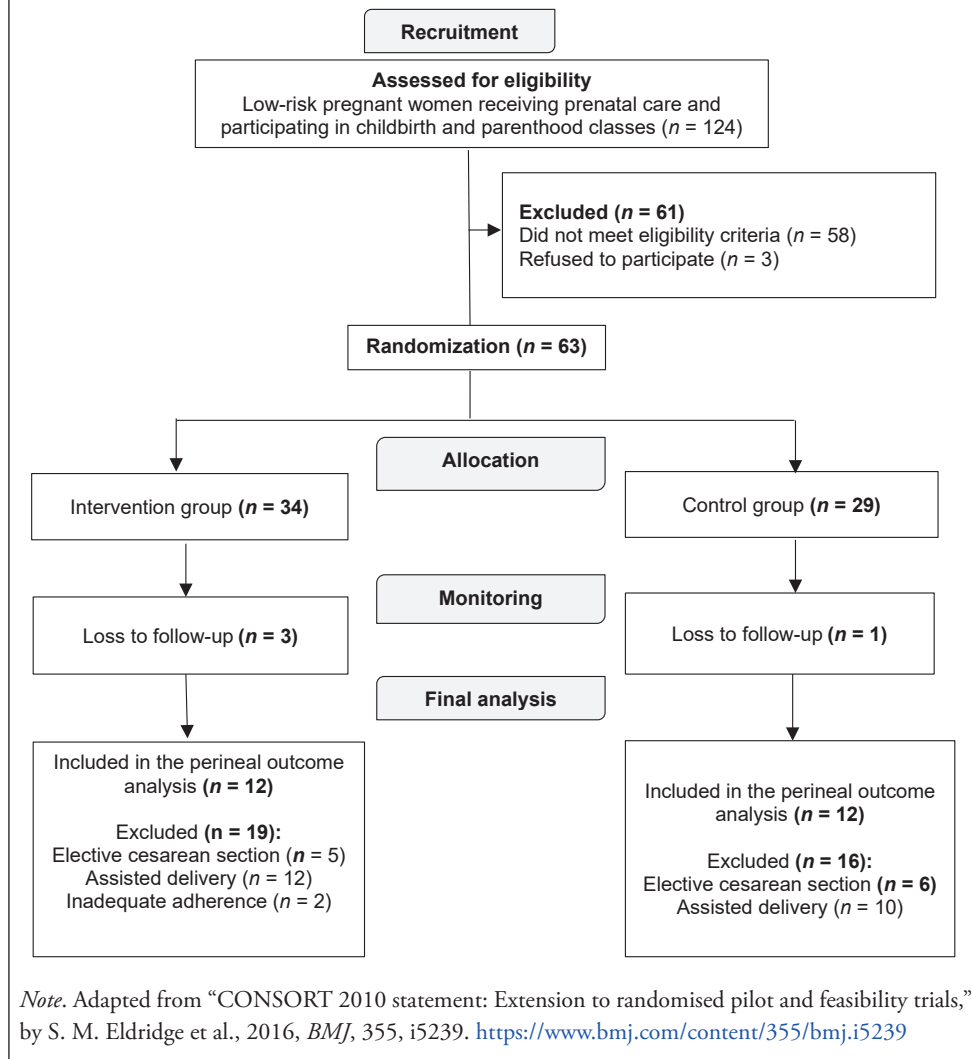
Regarding the participants' characteristics, both groups were statistically equivalent (Table 1), confirming the initial homogeneity between the groups and ensuring the comparability and validity of the observed results.

Perineal massage was performed on average 72.99% of the time, with an average weekly frequency of 5.11 sessions and an average duration of 9.53 minutes per session. On average, 54.22% of sessions involved self-massage, and 45.19% were performed by a partner or significant other (Table 2). All participants in the intervention group stated they would repeat perineal massage in a future pregnancy and would recommend it to other pregnant women. Regarding its usefulness in preparing the perineum for childbirth, 62.5% considered it very useful, 33.3% considered it useful, and 4.2% had no opinion, indicating high acceptability and satisfaction with the intervention. Regarding perineal outcomes, no statistically significant association was observed between antenatal perineal massage and the occurrence of perineal trauma during childbirth ($p = 0.193$; Table 3). Additionally, participants in the IG with an intact perineum postpartum performed the massage for a greater average number of weeks (5.67) and for a longer average duration per session (10.66 min) than those who experienced perineal trauma (3.74 weeks; 7.27 min), and these differences were statistically significant ($p < 0.05$; Table 4).

Table 1*Sociodemographic and clinical-obstetric characteristics of the participants*

Characteristics		Group		Total <i>n</i> (%)	Statistic test
		Intervention <i>n</i> (%)	Control <i>n</i> (%)		
Age	<i>M ± SD</i>	29.58 ± 5.14	31.42 ± 4.42	30.50 ± 4.78	<i>Z</i> = 0.986 <i>p</i> = 0.324
Ethnicity	White	11 (91.7)	12 (100.0)	23 (95.8)	χ^2 = 1.043 <i>p</i> = 0.999*
	Hispanic	1 (8.3)	0 (0.0)	1 (4.2)	
	Total	12 (100)	12 (100)	24 (100)	
Marital status	Single	5 (41.7)	4 (33.3)	9 (37.5)	χ^2 = 0.178 <i>p</i> = 0.999*
	Married/ Civil partnership	7 (58.3)	8 (66.7)	15 (62.5)	
	Total	12 (100)	12 (100)	24 (100)	
Educational attainment	Elementary school	1 (8.3)	0 (0.0)	1 (4.2)	χ^2 = 1.229 <i>p</i> = 0.999*
	Secondary school	5 (41.7)	6 (50.0)	11 (45.8)	
	Bachelor's degree	4 (33.3)	4 (33.3)	8 (33.3)	
	Postgraduate training	2 (16.7)	2 (16.7)	4 (16.7)	
	Total	12 (100)	12 (100)	24 (100)	
Smoking habits	No	10 (83.3)	10 (83.3)	20 (83.3)	χ^2 = 0.001 <i>p</i> = 0.999*
	Yes	2 (16.7)	2 (16.7)	4 (16.7)	
	Total	12 (100)	12 (100)	24 (100)	
Physical exercise Flexibility	No	9 (75.0)	10 (83.3)	19 (79.2)	χ^2 = 0.253 <i>p</i> = 0.999*
	Yes	3 (25.0)	2 (16.7)	5 (20.8)	
	Total	12 (100)	12 (100)	24 (100)	
Pre-pregnancy BMI	<i>M ± SD</i>	25.65 ± 3.86	24.68 ± 3.37	25.16 ± 3.58	<i>Z</i> = -0.693 <i>p</i> = 0.514
GA at randomization	<i>M ± SD</i>	32.02 ± 2.91	31.95 ± 1.63	31.99 ± 2.31	<i>Z</i> = -0.927 <i>p</i> = 0.378
Parity at randomization	Nulliparous	9 (75.0)	9 (75.0)	18 (75.0)	χ^2 = 0.001 <i>p</i> = 0.999*
	Primiparous/ Multiparous	3 (25.0)	3 (25.0)	6 (25.0)	
	Total	12 (100)	12 (100)	24 (100)	

Note. *n* = Number; % = Percentage; *M ± SD* = Mean ± Standard deviation; χ^2 = Independence test statistic; *Z* = Mann-Whitney test statistic for two independent samples; *p* = Significance value; * = Fisher's exact test; GA = Gestational age; BMI = Body Mass Index.

Figure 1*Flowchart of the randomized clinical trial for nonpharmacological interventions***Table 2***Characterization of the frequency, duration, and person who performed perineal massage in the intervention group*

	Minimum	Maximum	<i>M ± SD</i>
% of days of practice	23.81	100	72.99 ± 22.93
Weeks of treatment	1.86	7.43	4.77 ± 1.56
Average number of massages per week	1.67	7	5.11 ± 1.61
Average duration per massage (min)	4.87	16.94	9.53 ± 3.32
% of self-massages performed	0 (n = 5)	100 (n = 8)	54.22 ± 44.10
% of massages performed by the partner	0	100	45.19 ± 43.75

Note. n = Number; % = Percentage; *M ± SD* = Mean ± Standard deviation.

Table 3*Obstetric, neonatal, and perineal outcomes among participants with a normal delivery*

Characteristics		Group		Total <i>n</i> (%)	Statistic test
		Intervention <i>n</i> (%)	Control <i>n</i> (%)		
Delivery location	A	2 (16.7)	2 (16.7)	4 (16.7)	$\chi = 2.245$ $p = 0.999^*$
	B	0 (0.0)	1 (8.3)	1 (4.2)	
	C	8 (66.7)	8 (66.7)	16 (66.7)	
	D	1 (8.3)	1 (8.3)	2 (8.3)	
	E	1 (8.3)	0 (0.0)	1 (4.2)	
Duration of Labor	$M \pm SD$	8.75 $\pm$ 5.34	9.08 $\pm$ 5.81	8.91 $\pm$ 5.46	$Z = -0.029$ $p = 0.997$
Maternal Expulsive Position	Lithotomy	10 (83.3)	11 (91.7)	21 (87.5)	$\chi = 0.381$ $p = 0.999^*$
	Vertical	2 (16.7)	1 (8.3)	4 (12.5)	
Postpartum Perineal Pain (48h)	No Pain	7 (58.3)	5 (41.7)	12 (50.0)	$\chi = 2.187$ $p = 0.644^*$
	Mild Pain	3 (25.0)	2 (16.7)	5 (20.8)	
	Moderate Pain	2 (16.7)	4 (33.3)	6 (25.0)	
	Severe Pain	0 (0.0)	1 (8.3)	1 (4.2)	
Epidural Analgesia	No	3 (25.0)	0 (0.0)	3 (12.5)	$\chi = 0.429$ $p = 0.217^*$
	Yes	9 (75.0)	12 (100)	21 (87.5)	
Newborn Weight	$M \pm SD$	3145.00 $\pm$ 228.63	3001.67 $\pm$ 472.06	3073.33 $\pm$ 370.05	$Z = -0.808$ $p = 0.443$
Head Circumference	$M \pm SD$	33.79 $\pm$ 1.01	33.67 $\pm$ 1.54	33.73 $\pm$ 1.28	$Z = -0.089$ $p = 0.932$
Apgar Score at 1 Minute	$M \pm SD$	9.08 $\pm$ 0.67	8.75 $\pm$ 0.97	8.92 $\pm$ 0.83	$Z = -0.746$ $p = 0.514$
Apgar Score at 5 Minutes	$M \pm SD$	9.83 $\pm$ 0.58	9.58 $\pm$ 0.79	9.71 $\pm$ 0.69	$Z = -1.025$ $p = 0.514$
Apgar Score at 10 Minutes	$M \pm SD$	9.83 $\pm$ 0.58	9.75 $\pm$ 0.62	9.79 $\pm$ 0.59	$Z = -0.553$ $p = 0.755$
Gestational Age at Delivery	$M \pm SD$	38.80 $\pm$ 1.51	38.90 $\pm$ 1.14	38.85 $\pm$ 1.31	$Z = -0.348$ $p = 0.755$
Episiotomy	No	10 (83.3)	6 (50.0)	16 (67.7)	$\chi = 3.000$ $p = 0.193^*$
	Yes	2 (16.7)	6 (50.0)	8 (33.3)	
Perineal Laceration	No	8 (66.7)	8 (66.7)	16 (66.7)	$\chi = 1.141$ $p = 0.999^*$
	First degree	4 (33.3)	3 (25.0)	7 (29.2)	
	Second degree	0 (0.0)	1 (8.3)	1 (4.2)	
Perineal Trauma	No	6 (50.0)	2 (16.7)	8 (33.3)	$\chi = 3.000$ $p = 0.193^*$

Note. *n* = Number; % = Percentage; $M \pm SD$ = Mean $\pm$ Standard deviation; χ = Independence test statistic; Z = Mann-Whitney test statistic for two independent samples; p = Significance value; * = Fisher's exact test.

Table 4*Association between perineal massage adherence and perineal trauma during normal delivery in the intervention group*

Characteristics		Perineal Trauma		Total <i>n</i> (%)	Statistic test
		No <i>n</i> (%)	Yes <i>n</i> (%)		
Number of weeks of treatment	<i>M ± SD</i>	5.67 ± 0.77	3.74 ± 1.45	4.70 ± 1.50	<i>Z</i> = -2.085 <i>p</i> = 0.037
Number of massages per week	<i>M ± SD</i>	4.77 ± 1.47	5.97 ± 1.63	5.37 ± 1.61	<i>Z</i> = -1.696 <i>p</i> = 0.090
Massage duration (min)	<i>M ± SD</i>	10.66 ± 2.89	7.27 ± 2.34	8.96 ± 3.07	<i>Z</i> = -2.005 <i>p</i> = 0.041
Number of self-massages	<i>M ± SD</i>	12.50 ± 12.74	10.83 ± 8.30	11.67 ± 10.29	<i>Z</i> = -0.081 <i>p</i> = 0.937
Number of massages performed by the partner	<i>M ± SD</i>	14.17 ± 15.64	11.17 ± 15.26	12.67 ± 14.82	<i>Z</i> = -0.499 <i>p</i> = 0.699

Note. *n* = Number; % = Percentage; *M ± SD* = Mean ± standard deviation; χ = Independence test statistic; *Z* = Mann-Whitney test statistic for two independent samples; *p* = Significance value.

Discussion

This pilot study achieved a high recruitment rate, reflecting its effectiveness in attracting pregnant women's interest and the acceptability of the proposed intervention, both important indicators of feasibility (Eldridge et al., 2016). Although the low dropout rate indicates good acceptance of the intervention, the low retention rate, combined with the high cesarean section rate (42.1%), significantly reduced the number of vaginal deliveries eligible for the final analysis. In future clinical trials, a viable alternative might be to select regions with lower rates of assisted deliveries, which could optimize resources, prevent unnecessary losses, and increase both the study's efficiency and its external validity.

The low level of knowledge about perineal massage, as observed in our study, is also seen in other countries (Meeprom et al., 2023; Baradwan et al., 2024). In contrast, a cross-sectional study in Spain found that 61.5% of pregnant women between 37 and 42 weeks of gestation had high knowledge (García Pila et al., 2023). Yin et al. (2025) described multiple barriers related to the knowledge, attitudes, and practices of Specialist Nurses in Maternal and Obstetric Health regarding antenatal perineal massage, highlighting lack of knowledge and skills, increasing workload, absence of standardized clinical guidelines, and cultural barriers. Similarly, Mika et al. (2023) report that inconsistent recommendations obstruct the standardization of interventions and their incorporation into clinical practice. These findings reinforce the need for investment in continuing education and future research to develop a standardized protocol and promote its uniform implementation. Despite low awareness, the literature suggests that acceptance of perineal massage tends to be high when accompanied by appropriate professional guidance (Meeprom et al., 2023), as evidenced in this study.

The high adherence to perineal massage observed corroborates previous studies, suggesting participants' commitment and indicating that the technique can be integrated into their weekly routine. The slight discrepancy between the recommended and observed frequencies may reflect common limitations already described, such as fear of pain, modesty, forgetfulness, or lack of time (Monguilhott et al., 2022; Meeprom et al., 2023). Future research should further explore the factors affecting adherence to perineal massage to facilitate the development of educational interventions and support strategies that promote its practice. The partner's participation was evident, and, as in other studies (Monguilhott et al., 2022), the qualitative literature indicates that such involvement contributes positively to the pregnancy experience and strengthens the marital bond. In this study, it was a significant facilitating factor, not only in performing the technique but also in strengthening the emotional bond and fostering a sense of shared responsibility in the pregnancy process. The study demonstrated high acceptability of antenatal perineal massage, indicating a high degree of satisfaction with the experience, as reported by Monguilhott et al. (2022). These findings reflect perceptions of the technique's benefits and usefulness, suggesting that, when properly guided, it is well accepted and valued by pregnant women. The intention to repeat it in a future pregnancy and to recommend it to other pregnant women indicates the potential for informal dissemination.

Despite the small sample size, the results suggest a possible favorable trend in the IG, with a lower episiotomy rate and greater preservation of an intact perineum, consistent with the pilot study (Monguilhott et al., 2023). Although the results were not statistically significant, they offer preliminary estimates that may inform sample size calculations for future trials (Eldridge et al., 2016). A key question arising from these results concerns the potential impact of adherence to perineal massage on the

observed outcomes. To date, the available scientific evidence has not prioritized a standardized evaluation of the perineal massage protocol, and there are significant variations across clinical trials in frequency, session duration, and total practice duration. This heterogeneity hinders comparisons between studies and limits the consistency and generalizability of the conclusions.

Our study suggests that consistent sessions lasting approximately 11 minutes, along with continued practice over 5 to 6 weeks, are associated with less perineal trauma. These findings support the hypothesis of a possible dose–response relationship, in which the protective effect of perineal massage depends, to some extent, on the continuity and duration of the technique. This effect is supported by physiological mechanisms already discussed in the literature.

Cabral et al. (2022) reported consistent results in their randomized clinical trial, in which the group that performed perineal massage showed a total increase of approximately 2.6 cm in perineal extensibility after four weeks of practice, with two weekly 10-minute sessions. In addition, they observed a significant gain in muscle strength, with an average increase of more than 11 cm H₂O.

Recent studies indicate that perineal massage during the last 4 to 6 weeks of pregnancy is associated with greater perineal elasticity and a lower incidence of episiotomy and severe lacerations, particularly among primiparous women (Chen et al., 2022; Silva et al., 2023). These findings corroborate our study.

These results also underscore the importance of developing clinical trials that systematically address the perineal massage protocol, with the aim of more rigorously exploring the specific role of each adherence component—namely, frequency, session duration, and continuity of treatment over the weeks—in the intervention’s clinical impact.

Although the sample size was in line with recommendations for pilot studies, the results should be interpreted with caution. Although the evaluation of the intervention was based on participants’ self-reports, it was monitored digitally, with weekly contact to provide support and verify adherence to the protocol. Blinding was not possible due to the educational nature of the intervention, which precluded masking for participants and researchers.

Conclusion

To our knowledge, this is among the first experimental studies in Portugal investigating prenatal perineal massage. The intervention was feasible and well received, despite participants’ limited familiarity with the technique. Although no statistically significant reduction in perineal trauma was observed, initial estimates regarding its impact on term deliveries provide valuable insights for calculating sample sizes and refining future trial designs. Exploratory results also indicate that the number of practice weeks and session duration may be more important than weekly frequency or the person performing it, which should be explored further. Overall, these findings highlight the need for additional research to better understand

the clinical benefits of prenatal perineal massage and to optimize its protocol.

Author contributions

Conceptualization: Madaleno, I. C.

Data curation: Madaleno, I. C.

Formal analysis: Madaleno, I. C.

Funding acquisition: Madaleno, I. C.

Investigation: Madaleno, I. C., Correia, T. I.

Methodology: Madaleno, I. C., Correia, T. I.

Project administration: Madaleno, I. C.

Resources: Madaleno, I. C.

Software: Madaleno, I. C.

Supervision: Azevedo, A. F.

Validation: Madaleno, I. C., Correia, T. I.

Visualization: Madaleno, I. C., Correia, T. I.

Writing – original draft: Madaleno, I. C., Correia, T. I.

Writing – review & editing: Madaleno, I. C., Correia, T. I.

Thesis/Dissertation

This article is based on a master’s thesis titled “*Efecto del masaje perineal prenatal en la promoción de la integridad perineal: estudio piloto*”, submitted to the Polytechnic Institute of Bragança in 2025.

References

- Baradwan, S., Banasser, A. M., Tawfiq, A., Hakeem, G. F., Alkaff, A., Hafedh, B., Algreisi, F., Khoja, T. A., Ibrahim, A. S., & Edrees, A. (2024). Patient awareness, knowledge, and acceptability of antenatal perineal massage: A single-center cross-sectional study from Saudi Arabia. *European Journal of Midwifery*, 8, 67. <https://doi.org/10.18332/ejm/194962>
- Beckmann, M. M., & Stock, O. M. (2013). Antenatal perineal massage for reducing perineal trauma. *Cochrane Database of Systematic Reviews*, 2013(4), Article CD005123. <https://doi.org/10.1002/14651858.CD005123.pub3>
- Cabral, A. L., de Freitas, S. S., Pinto, R. M. C., Resende, A. P. M., & Pereira-Baldon, V. S. (2022). Are perineal massage and instrument-assisted perineal stretching with short protocol effective for increasing pelvic floor muscle extensibility? A randomized controlled trial. *Physical Therapy*, 102(3), pzab305. <https://doi.org/10.1093/ptj/pzab305>
- Chen, Q., Qiu, X., Fu, A., & Han, Y. (2022). Effect of prenatal perineal massage on postpartum perineal injury and postpartum complications: A meta-analysis. *Computational and Mathematical Methods in Medicine*, 2022(1), Article 3315638. <https://doi.org/10.1155/2022/3315638>
- Eldridge, S. M., Chan, C. L., Campbell, M. J., Bond, C. M., Hopewell, S., Thabane, L., & Lancaster, G. A. (2016). CONSORT 2010 statement: Extension to randomised pilot and feasibility trials. *BMJ*, 355, i5239. <https://doi.org/10.1136/bmj.i5239>
- García Pila, F., Villa Jaime, A., & Romero Pérez, J. (2023). Estudio descriptivo sobre la práctica, satisfacción y conocimiento de las puérperas con respecto al masaje perineal. *Hygia de Enfermería*, 40(2), 58–66. <https://revistahygia.es/pdf/40-2/Hygia-de-Enfermeria-2023-volumen-40-tomo-2-pp-58-66.pdf>
- Kunselman, A. R. (2024). A brief overview of pilot studies and their sample size justification. *Fertility and Sterility*, 121(6), 899–901.



- <https://doi.org/10.1016/j.fertnstert.2024.01.040>
- Meeprom, T., Ruanphoo, P., Bunyavejchevin, S., & Chiengthong, K. (2023). Knowledge, attitude and acceptability regarding antenatal perineal massage in Thai pregnant women. *International Urogynecology Journal*, 34(9), 2189–2195. <https://doi.org/10.1007/s00192-023-05531-3>
- Milka, W., Paradowska, W., Kołomańska-Bogucka, D., & Mazur-Biały, A. I. (2023). Antenatal perineal massage – risk of perineal injuries, pain, urinary incontinence and dyspareunia - a systematic review. *Journal of Gynecology Obstetrics and Human Reproduction*, 52(8), 102627. <https://doi.org/10.1016/j.jogoh.2023.102627>
- Monguilhott, J. J. C., Brüggemann, O. M., Velho, M. B., Knobel, R., & Costa, R. (2022). Massagem perineal pré-natal para prevenção do trauma: Piloto de ensaio clínico randomizado. *Acta Paulista de Enfermagem*, 35, eAPE0381345. <https://doi.org/10.37689/acta-ape/2022AO0381345>
- Monguilhott, J. J. da C., Nóbrega, J. F. da, Alves, I. F. B. de O., Prado, R. A. do, Costa, R. da, & Velho, M. B. (2023). Massagem perineal durante a gestação: Experiência dos acompanhantes. *Saberes Plurais Educação na Saúde*, 7(2), e130969. <https://doi.org/10.54909/sp.v7i2.130969>
- Packer, C., & Leeman, L. (2024). Perineal lacerations. In StatPearls. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK559068/>
- Rodrigues, S., Silva, P., Agius, A., Rocha, F., Castanheira, R., Gross, M., & Calleja-Agius, J. (2019). Intact perineum: What are the predictive factors in spontaneous vaginal birth? *Materia Socio-Medica*, 31(1), 25–30. <https://doi.org/10.5455/msm.2019.31.25-30>
- Royal College of Midwives & Royal College of Obstetricians and Gynaecologists. (2023). Reducing perineal trauma: Clinical guidelines for maternity care professionals. London: RCM & RCOG. <https://www.rcog.org.uk/for-the-public/perineal-tears-and-episiotomies-in-childbirth/reducing-your-risk-of-perineal-tears/>
- Silva, M. L. da, Santos, T. A. B. P. de S., Leite, L. W. C., Silva, C. E. C. da, Nascimento, A. O. do, Alves, A. T., Driusso, P., & Cunha, K. da C. (2023). The effectiveness of interventions in the prevention of perineal trauma in parturients: A systematic review with meta-analysis. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 283, 100–111. <https://doi.org/10.1016/j.ejogrb.2023.02.008>
- Yin, J., Chen, Y., Zhao, X., Cao, Z., Li, Y., Jiang, Z., Zhang, Y., Pan, Y., Shen, J., & Huang, M. (2025). Knowledge, attitude, and practice of Chinese midwives performing in perineal massage for pregnant women in the latter stages of pregnancy. *BMC Pregnancy and Childbirth*, 25, Article 376. <https://doi.org/10.1186/s12884-025-07495-2>