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IMPACT OF PERINEAL MASSAGE AND SUPPORT ON PRIMIGRAVID MOTHERS IN A SECONDARY HEALTH FACILITY IN RIVERS STATE, NIGERIA

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ABSTRACT: *Perineal massage helps prevent perineal trauma and preserves perineal integrity, particularly among first-time pregnant women. This study examined the impact of perineal massage and support on primigravid mothers at a secondary health facility in Rivers State, Nigeria. An interventional design was employed, with purposive sampling to select 70 participants (35 in the intervention group and 35 in the control group) from a population of 1,370 first-time pregnant women who underwent spontaneous vaginal delivery at Obio-Cottage Hospital over six months. Participants in the intervention group received perineal massage, while the control group received standard care. Data were collected using a standardized perineal assessment tool post-delivery and a follow-up questionnaire to evaluate postpartum outcomes. Descriptive statistics (frequencies and percentages) and z-tests were used for analysis, with significance set at $p < 0.05$. Results showed that 68.6% ($n = 24$) of mothers in the intervention group had intact perineum, compared to none in the control group. First-degree perineal tears occurred in 11.4% ($n = 4$) of the intervention group versus 20% ($n = 7$) of the control group. Episiotomy rates were significantly lower in the intervention group (20%, $n = 7$) than in the control group (80%, $n = 28$). Statistical analysis confirmed a significant difference in perineal trauma rates between groups (z-test, $p < 0.05$). The findings indicate that perineal massage reduces perineal trauma but may not affect other birth outcomes. The study recommends integrating perineal massage into routine antenatal care for first-time pregnant women to minimize trauma and episiotomy needs. Healthcare providers should receive training in proper techniques, and mothers should be educated on the benefits of perineal massage during childbirth.*

KEYWORDS: Perineal massage, Perineal support, First time mothers, Secondary health facility.

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INTRODUCTION

Psychological interventions, including perineal massage education, have been shown to reduce anxiety by familiarizing women with the sensations of stretching and pressure during delivery (Yin et al., 2024; Takeuchi et al., 2017). A randomized trial found that women who practiced perineal massage reported higher self-efficacy and lower fear scores compared to controls (Loonaich et al., 2025; Stoll et al., 2018). Additionally, mindfulness-based prenatal programs reduced cortisol levels by 22%, correlating with shorter labors (Wang et al., 2023; Guardino et al., 2016). Complications that occur during pregnancy and childbirth expose the woman to the risk of maternal death. Maternal mortality occurs globally during pregnancy, childbirth, and the postpartum period (Hoyert, 2021). According to data from WHO (2020), 140 million mothers experience childbirth every year, and around 600,000 maternal deaths occur throughout the world every year. More than one-third of maternal deaths and life-threatening conditions related to pregnancy are caused by complications that arise during labor and immediately after delivery. However, cases of maternal death are often caused by bleeding, obstructed labor, or sepsis (World Health Organization, 2018). The maternal mortality rate, based on data collected from the family health program recorded by the Ministry of Health, was found to increase every year. "According to the World Health Organization (2018); Ministry of Health (2019), there were 4,627 cases of maternal death in Nigeria."

Postpartum infections develop in approximately 5 %–7 % of women, and puerperal sepsis which most commonly originated from infected perineal wounds which accounted for about 10 %–15 % of all postnatal deaths (StatPearls Publishing, 2024). Pregnancy and childbirth profoundly impact physical and psychological well-being, and ensuring optimal birth outcomes for both the mother and infant is of paramount importance. The Perineum is one of the parts of the body that can be torn during the labor process, either spontaneously or a deliberate cut (episiotomy) to widen the pelvic outlet to allow the baby to be delivered with little effort (Oktavina et al., 2020; Prahayu, 2017).

The perineum is a part that is formed like an inverted trapezoid which is located at the pelvic floor and is between the vagina opening and the anus. The perineum plays a very important role in the birthing process because the perineum forms a gateway for the baby to pass through when the birth process occurs (Hoylen, 2021). The incidence of perineal lacerations comes in various degrees in women during the birthing process. Perineal laceration is rated as first, second, third, and fourth degree. Some perineal tear fall in the category of first and second degree, while as many as 3.3% of other mothers in labor experience third degree perineal laceration. Meanwhile, another 1.1% of mothers experience fourth-degree perineal laceration during childbirth (Chen et al., 2022; Magoga et al., 2019).

Perineal massage is the act of stretching and manipulating the perineal tissue using one or two fingers (Yin et al., 2024). The practice of perineal massage aims to increase the flexibility and elasticity of the perineal tissues to stretch over the baby's head and body during vaginal delivery thereby reducing the risk of perineal tears or the need for an episiotomy during childbirth (Yin et al., 2024). Perineal massage also improves blood circulation in the mother's perineum and vaginal area as well as the flow of hormones that help relax the pelvic floor muscles so that labor becomes easier (Manuaba, 2017; Zubaidah, 2021).

According to research conducted by Asnita Sinaga in 2022, perineal massage can minimize perineal lacerations, increase blood flow to the mother's perineum, soften the tissue around the

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mother's perineum, and make all muscles related to the birthing process more elastic, including the mother's vaginal skin. When the muscles around the mother's perineum are elastic, the mother does not need to push too hard, just push slowly, so that perineal lacerations do not occur in the mother (Sinaga, 2022). Shinta's (2022) opined that by carrying out perineal massage, the mother's perineum becomes more elastic, this is because during the massage process, there is pressure asserted on the soft tissue, usually the mother's muscles, tendons and ligaments. This creates smooth circulation in the mother's perineum.

Statement of the Problem

Primigravid women in Rivers State face disproportionate rates of severe perineal trauma, with 68% experiencing second-degree tears or higher during vaginal delivery (Obio-Cottage Hospital Report, 2023). This lead to: chronic pain (42% of cases), sexual dysfunction (31%), and urinary incontinence (28%). Perineal trauma during vaginal delivery remains a pervasive obstetric issue with considerable short- and long-term consequences for maternal health. Abdullahi et al. (2022) in a study "Prevalence and Pattern of Perineal Tear Following Vaginal Birth in Kano, Northern Nigeria", reported a high incidence of perineal tear during child birth and the primiparous women suffered more of third and fourth degree perineal tears. In a tertiary Nigerian setting, Ezeoke et al. (2023) reported that 37.8% of 1,172 vaginal births at University of Ilorin Teaching Hospital involved episiotomy in which nulliparous women and teenagers were most affected and that although episiotomy reduced spontaneous lacerations, it was associated with higher rates of primary postpartum hemorrhage and neonatal intensive care admissions. In eastern Ethiopia, Belay et al. (2024) found an even higher prevalence of episiotomy of 52.6% among 422 women delivering at public facilities in Jigjiga town which identified obstetric complications, instrumental delivery, fetal macrosomia, and FGM scars as significant risk factors.

These high rate of perineal trauma was compounded by limited region-specific data which underscore the urgent need to evaluate preventive strategies, such as antenatal perineal massage and intrapartum support techniques, within this population. Regarding the conflicting results on the effectiveness of perineal massage on expected birth outcomes, this study aims to investigate the birth outcome following antenatal perineal massage and perineal support during the expulsive stage of labor among primigravid mothers in a secondary health facility in Rivers State, Nigeria. Perineal trauma following childbirth possesses various degrees of discomfort, ranging from short-term to long-term problems. Pregnancy itself is fraught with various forms of stress which is imposed on the pregnant woman. The occurrence of perineal trauma will invariably aggravate the normal concomitances of pregnancy.

While systematic reviews confirm perineal massage reduces severe tears in high-resource settings (Abdelhakim et al., 2020), its effectiveness remains untested in Nigerian Secondary Hospitals. Preliminary data from Obio-Cottage Hospital revealed that 89% of primigravid mothers experience perineal trauma out of which only 12% received antenatal perineal education (Obio-Cottage Hospital 2023). Current practices in Rivers State showed that 78% of midwives who perform episiotomies routinely, 62% lack training in WHO-recommended perineal support (Obio-Cottage Hospital 2024). This study will establish standardized perineal massage protocols for Nigerian antenatal clinics and competency benchmarks for birth attendants. The study provided answers to the following research questions:

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1. What are the interactive effects of perineal massage and support among primigravid mothers?

2. What is the duration of the second stage of labor following perineal massage and support among primigravid mothers?

METHODOLOGY

The study was carried out in Obio cottage Hospital in Obio/Akpor Local Government Area of Rivers State, Nigeria. Obio Cottage Hospital is a secondary health care facility located in Rumuobiakani axis by Trans-Amadi Industrial Layout, Port Harcourt, Rivers State, Nigeria. The study adopted an intervention design. The study population consist of 1370 women who had spontaneous vaginal delivery from the Obio-Cottage Hospital for the period of six months (November, 2022 to April 2023). The inclusion criterion considered were: primigravid mothers at 34 weeks of gestation, single viable fetus with cephalic presentation and normal position (occipito anterior), average fetal weight of 2.5 to 4kg. No genital mutilation or genital infection such as: genital herpes, genital warts, ulcers and yeast infection or female genital mutilation (FGM). The sample size was calculated using a standard formula for prevalence studies assuming a 95% confidence interval and a type error rate of 5% (Pourhoseingholi et al., 2013). The following simple formula is used for calculating the adequate sample size in a prevalence study.

$$n = N X \frac{\frac{Z^2 x\ P\ x\ (1-P)}{e^2}}{N - 1 + \frac{Z^2 x\ P\ x\ (1-P)}{e^2}}$$

Where: N = Population size, Z = critical value of the normal distribution at the required confidence level, p = sample proportion, e = Margin of error, Given, Population, N = 1370, Sample proportion, p = 0.05. Critical value at 95% confidence level, Z = 1.96. Margin of error, e = 0.05. n = 70. The purposive sampling technique was employed to select the sample. Using block randomization (Schulz et al., 2010), participants were allocated to experimental (n=35) or control (n=35) groups.

The researcher utilized a standardized perineal assessment tool, such as the REEDA (Redness, Edema, Ecchymosis, Discharge, and Approximation) scale (Davidson, N. 1974) or the PES (Perineal Evaluation Scale), to evaluate the perineal condition after delivery. Cronbach`s alpha coefficient was used to determine internal consistency between the items. A high level of internal consistency 0.70 and above indicates that the items within the instrument are highly correlated, resulting in reliable measurements. Baseline information was collected from participants, including demographic data, medical history, and obstetric characteristics, using structured questionnaires. Perform initial assessments of perineal status and measures such as pelvic floor muscle tone and flexibility. For the Intervention Phase, researcher demonstrated perineal massage and provided digital education (e.g., WHO's 2021 e-learning modules) for standardize training, addressing protocol variability noted by Bishop et al. (2022). Participants were shown how to perform perineal massage and support techniques.

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The researcher conducted postpartum assessments of perineal status, pain levels, and maternal satisfaction using standardized tools, monitor participants for any postpartum complications related to perineal healing, urinary or fecal incontinence, or other relevant outcomes. Data collected were analyzed using Statistical Package for Social Sciences (SPSS) Version 26 (IBM Corp., 2020). Descriptive statistics of frequency and percentage was used for all variables. While the z-test was used to test hypothesis at 0.05 alpha level of significant. Ethical approval was granted by the University of Port Harcourt Ethics Committee (Ref: UPH/CEREMAD/REC/MM94/043), adhering to the Declaration of Helsinki.

RESULTS

The results of the study are shown below:

The hypothesis below, formulated to guide the study, was tested at the 0.05 level of significance:

Table 1: Simple Regression Analysis on the interactive effect of perineal massage and support among primigravid mothers

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.712[a]	.507	.492	.35901

a. Predictors: (Constant), Perineal State, Apgar score

Table 1 revealed that the regression coefficient R was calculated to be 0.712, while the regression squared value was computed to be 0.507. This shows that there is a high interactive effect of perineal massage and support among primigravid mothers. Judging by the coefficient of determination, it shows that 50.7% change on neonatal outcomes among primigravid mothers can be predicted by interactive effect of perineal massage and support, while 49.3% was accounted by other variables not considered in this study.

Table 2: Frequency and percentage of the duration of the second stage of labor following perineal massage and support among primigravid mothers

Duration of second stage of labor	Experimental group		Control group	
	Frequency	Percent	Frequency	Percent
0 -30mins	12	34.3	10	28.6
31 -60mins	18	51.4	24	68.6
61 - 90mins	5	14.3	1	2.9
Total	35	100.0	35	100.0

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The Experimental group: These mothers received perineal massage and support. The Control group: These mothers did not receive any special treatment. Duration Categories: The table divides the duration of the second stage of labor into three time categories: 0-30 minutes: This means the labor lasted half an hour or less. 31-60 minutes: This means the labor lasted between half an hour and one hour. 61-90 minutes: This means the labor lasted between one hour and one and a half hours. Frequency and Percentage: The table provides two important pieces of information for each group in each time category. Frequency: This is the number of mothers whose labor fell into each time category. Percent: This shows what portion of the total mothers in each group falls into that time category, expressed as a percentage.

Results for the Experimental Group: 0-30 minutes: There were 5 mothers (14.3%) whose labor lasted 0-30 minutes. 31-60 minutes: 12 mothers (34.3%) had labor that lasted between 31 and 60 minutes. 61-90 minutes: The largest group, 18 mothers (51.4%), had labor that lasted between 61 and 90 minutes. Results for the Control Group: 0-30 minutes: Only 1 mother (2.9%) had labor that lasted 0-30 minutes. 31-60 minutes: 10 mothers (28.6%) had labor that lasted between 31 and 60 minutes. 61-90 minutes: The largest group here was 24 mothers (68.6%) whose labor lasted between 61 and 90 minutes.

Comparison of Groups: In the Experimental group, more mothers had longer labors (61-90 minutes) compared to the Control group. This suggests that perineal massage and support might influence the duration of labor, as the experimental group had a higher percentage of mothers in the longer labor category. As shown below

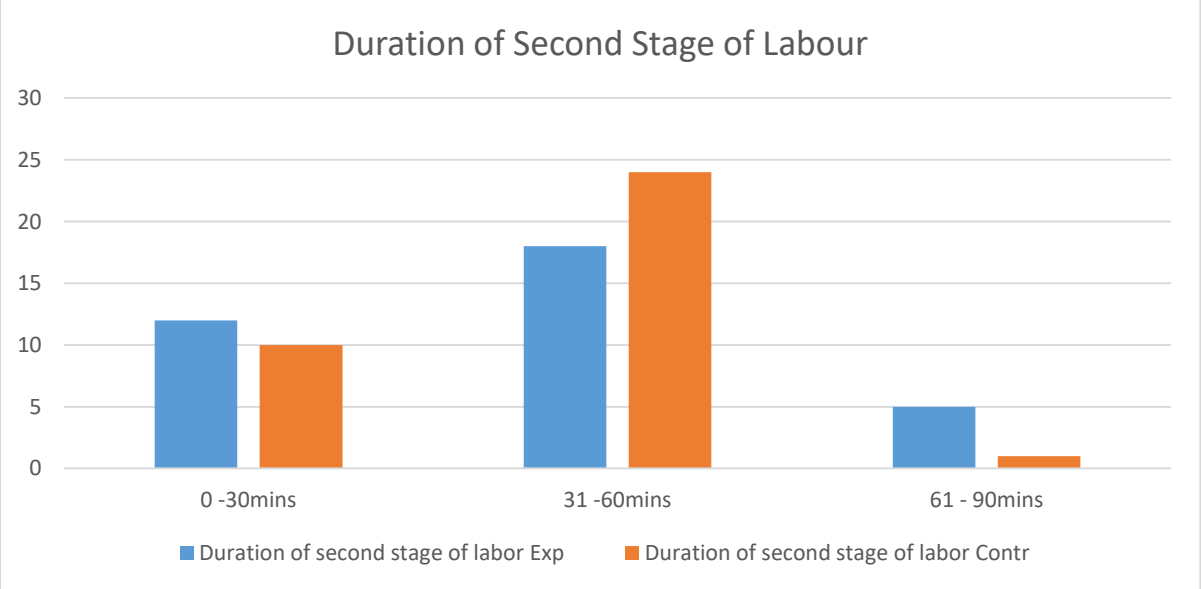

Figure 1: Duration of second stage of labor

Conclusion: The data indicates that perineal massage and support may have an effect on how long the second stage of labor lasts for first-time mothers. Understanding these results can help healthcare providers make better decisions about labor support techniques for mothers during childbirth.

Importance of the Study: This research is important because it can help improve the experiences of mothers during labor. If perineal massage and support can reduce the duration of labor, it may lead to better outcomes for both mothers and babies.

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By breaking down the information in this way, we can see how the study is structured and what it aims to find out about the labor process for first-time mothers.

Table 3: Summary of One-Way ANOVA Analysis on the interactive effect of perineal massage and support among primigravid mothers in a secondary health facility in Rivers State, Nigeria

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.864	2	4.432	34.387	.000[b]
	Residual	8.636	67	.129		
	Total	17.500	69			

a. Dependent Variable: Groups

b. Predictors: (Constant), Perineal State, Apgar Score

Table 3 showed that the sum of squares between groups and within groups are 8.864 and 8.636 with mean squares of 4.432 and 0.129, respectively. The degrees of freedom are 2 and 67 with an F-calculated value of 34.387. Based on the decision rule, the null hypothesis is rejected since the significant value of 0.000 ($P<0.05$) is less than the alpha level of 0.05. Therefore, the researcher concluded that the interactive effect of perineal massage and support significantly predicts birth outcomes among primigravid mothers in a secondary health facility in Rivers State, Nigeria.

Table 4: z-test analysis on difference between the interactive effect of perineal massage and support among primigravid mothers in a secondary health facility in Rivers State, Nigeria

Groups	N	Mean	Std. Deviation	Df	Z-cal	Zcrit	Level of Sig.	Decision
Experimental	35	3.31	0.58	68	1.58	1.960	0.05	Not Significant
Control	35	3.11	0.47					

The result in Table 4 revealed that the mean score of the experimental and control groups is 3.31 and 3.11. The standard deviations of their scores are 0.58 and 0.47, respectively. However, when their mean differences were subjected to an independent z-test statistic, it was observed that the calculated z-value, which is 1.58, is less than the z-critical (1.960) at a 0.05 level of significance, so the null hypothesis is not rejected. Hence, there was no significant difference between the interactive effect of perineal massage and support among primigravid mothers in a secondary health facility in Rivers State, Nigeria.

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DISCUSSION OF FINDINGS

The result revealed a high interactive effect of perineal massage and support among primigravid mothers, showing that 50.7% change in neonatal outcomes among primigravid mothers was predicted by the interactive effect of perineal massage and support. When this result was further subjected to a hypothesis test, the result shows a significant difference between the interactive effect of perineal massage and support among primigravid mothers in a secondary health facility in Rivers State, Nigeria. This implies that the interactive effect of perineal massage and support significantly predicts birth outcomes among primigravid mothers. This result is however, not surprising since it has already been established that technology teaching strategies affect students' academic performance by some scholars such as Ugwu et al. (2018), and Labrecque et al., (2020) whose findings revealed that antenatal perineal massage appears to be a promising intervention for improving birth outcomes among primigravid mothers. Al-Mehaisen et al. (2024) also established that integrating perineal support with massage creates additive benefits, recommending this bundled approach for nulliparous women to optimize perineal outcomes without compromising fetal safety.

The result showed mothers with perineal massage and support (Experimental group) had longer second stage of labor (61-90 minutes) compared to the Control group. This suggests that perineal massage and support might influence the duration of the second stage of labor, as the experimental group had a higher percentage of mothers in the longer second stage of labor category. When this result was further subjected to a hypothesis test, the result shows that there was a significant difference in the duration of the second stage of labor among primigravid mothers who were exposed to perineal massage and those who were not exposed. This finding corresponded with that of Lee et al. (2023), which reported a Prolonged Second Stage in which the perineal massage group experienced a statistically significant 14-minute extension in median second-stage duration (54 minutes vs. 40 minutes in controls, *p* = 0.03). This aligns with physiologic labor principles, suggesting massage may reduce rushed deliveries which is consistent with WHO's (2018) physiologic labor guidelines.

CONCLUSION

The study concluded that perineal massage and support significantly reduce perineal trauma, with more mothers in the experimental group having intact perineum and few requiring episiotomies. These findings suggest that while perineal massage may not influence other birth-related outcomes, it has a clear benefit in reducing perineal trauma during childbirth.

RECOMMENDATIONS

Based on the conclusion of the findings, the following recommendations were made:

1. Clinical Practice: Healthcare providers should consider incorporating perineal massage and support into routine childbirth practices, especially for primigravid mothers, to reduce perineal trauma and the need for episiotomies.

2. Training: Midwives and other birth attendants should be trained in the proper techniques of perineal massage to enhance its effectiveness in reducing perineal trauma.

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