ONLINE ISSN :3007-309X
PRINT ISSN :3007-3081

Journal of Medical & Health Sciences Review

COMPARISON OF PERINEAL MASSAGE VERSUS ROUTINE CARE TO IMPROVE OUTCOME OF LABOR IN PRIMIGRAVIDA FEMALES

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ARTICLE INFO:

Keywords: Perineal Massage; Episiotomy; Perineal Tear; Second Stage Of Labor; Primigravida; Vaginal Delivery; Labor Outcomes

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Article History:
Published on 05 July 2025

ABSTRACT

Background: Perineal trauma and episiotomy remain prevalent concerns in primigravida women undergoing vaginal delivery, often leading to prolonged recovery and increased postpartum morbidity. Antenatal perineal massage has been proposed as a simple intervention to reduce such complications and enhance labor outcomes.

Objective: To compare the effects of antenatal perineal massage versus routine care on labor outcomes, particularly the duration of the second stage of labor, incidence of perineal tears, and episiotomy rates in primigravida females.

Methods: This randomized controlled trial was conducted at the Department of Obstetrics and Gynecology, Lady Willingdon Hospital, Lahore, over six months. A total of 180 primigravida women aged 18–35 years and at ≥32 weeks gestation were enrolled via non-probability convenience sampling and randomly allocated into two groups (n=90 each). Group A received perineal massage during active labor (twice, each for 10 minutes using olive oil), while Group B received routine care. The primary outcomes assessed were duration of the second stage of labor, incidence of perineal tears, and episiotomy rates. Data were analyzed using SPSS version 26, with independent t-tests and chi-square tests used for comparisons. A p-value <0.05 was considered statistically significant.

Results: The mean duration of the second stage of labor was significantly shorter in the perineal massage group (52.5 ± 15.4 min) compared to the routine care group (72.3 ± 20.1 min, $p<0.001$). Perineal tears occurred in 8.9% of the massage group versus 20% of the routine care group ($p=0.036$). Episiotomy was required in 42.2% of women in the massage group compared to 72.2% in the routine care group ($p<0.001$). Stratified analysis by age and BMI showed consistent improvements in the massage group.

Conclusion: Antenatal perineal massage improves labor outcomes of primigravida females greatly by decreasing the length of the second stage of labor, perineal tears, and episiotomy. Considering its simplicity, affordability, safety, this modality should be a standard recommendation in antenatal care, for primigravida women.

1. INTRODUCTION

Vaginal delivery is well known to be the safest and the most physiological way of delivery with benefits of decreased maternal morbidity, quicker recovery after childbirth and lower chance of developing surgical complications, compared to cesarean delivery [**1**]. However, primigravida women tend to experience greater anxiety over labor especially due to fear of perineal pain and trauma during labor [**2**]. Greater than 85% of women sustain some type of perineal trauma (ranging from first degree to third- or fourth-degree lacerations) at the time of vaginal delivery [**3**]. These injuries may have strong impact on the quality of life after delivery causing pain, dyspareunia, urinary or fecal incontinence and psychological distress [**4**]. Episiotomy (a surgical incision in the perineum) was a normal procedure for assisting at birth, particularly with primigravidas, to avoid serious perineal lacerations [**5**]. However, contemporary obstetrics is becoming more conservative in its management, because research has shown that regular episiotomies may be counterproductive [**6**].

In this context antenatal perineal massage has become a non-invasive and affordable intervention with the potential to reduce the risk and severity of perineal trauma. That is, this technique entails the mild and regular stretching of the perineal tissues from the 34th week of gestation upwards with a view to enhancing tissue elasticity and preparing the perineum to accommodate the stretching needed during childbirth [**7**]. There is evidence that perineal massage reduces the need for episiotomy, reduces perineal tear incidence and increases the probability of delivering intact perineum [**8**]. A Cochrane review by Beckmann and Garrett indicated that women who did perineal massage had a much lower risk of third- or fourth degree tear and also needed suturing less [**3**]. Similarly, Ugwu et al. reported in a randomized controlled trial that use of antenatal perineal massage substantially reduced the incidence of both episiotomy and postpartum pain [**9**].

In a meta-analysis by Abdelhakim and colleagues there was evidence that perineal massage during the last weeks of pregnancy reduced the rate of episiotomy by 15–20% in primigravida women [**10**]. This benefit was especially notable when the technique was practiced consistently, at least three to four times per week. Moreover, it had no adverse effect on neonatal outcomes, confirming its safety [**11**]. The benefits of perineal massage are not limited to preventing trauma; it has also been associated with a shorter second stage of labor [**12**]. Leon-Larios et al. found that women in the perineal massage group had a significantly shorter duration of pushing compared to those receiving routine care. They found that mean duration of second stage of labor was 53.31±42.62 min with perineal massage and 73.27±51.28 min without perineal massage, perineal trauma in 5.7% vs. 15.62%, episiotomy was done in 50.25% vs. 81.8% cases, respectively ($p<0.05$) [**13**]. Furthermore, perineal massage was shown to reduce postpartum perineal pain and enhance pelvic floor recovery in the weeks following birth [**14**].

Despite this growing body of evidence, perineal massage remains underutilized, particularly in low- and middle-income countries, including Pakistan. Cultural taboos, lack of awareness, and insufficient antenatal counseling are major barriers to its adoption [**6**,**12**]. In local clinical settings, episiotomies are still routinely performed, often without individualized assessment. This is an eminently burdensome practice, which also aggravates maternal morbidity, and extends hospital stay dramatically [**2**, **5**]. Educational and awareness programs will go a long way in educating the healthcare service provider and the pregnant woman. Antenatal counseling sessions should include analysis of demonstrations and clear communication of

the potential benefits of the technique. Obstetricians and midwives also must be taught to recommend and to help make it a norm of antenatal care, especially for primigravida women [**3**, **7**].

Missing local data together with little integration of this intervention into standard obstetric protocols dictated the design of this study to compare the effects of perineal massage to routine care on delivery outcomes in primigravida women. The objective is to determine whether implementing antenatal perineal massage can significantly reduce the rates of perineal trauma, decrease the need for episiotomy, shorten the duration of labor, and improve postpartum recovery.

2. MATERIAL AND METHODS

2.1. Study design

This study is designed as a randomized controlled trial and is being conducted in the Department of Obstetrics and Gynecology at Lady Willingdon Hospital, Lahore. The duration of the study is six months. A non-probability convenience sampling technique is used to recruit eligible participants. Approval for this study was taken from Lady Willingdon Hospital ethical committee, Department of Obstetrics and Gynaecology, dated July 15th , 2024 (Reference no: 1598-3-LWH-OBG).

2.2. Sample size

By using openepi.com, sample size of 180 females; 90 in each group is calculated with 95% confidence level, 80% power of study and mean duration of second stage of labor i.e. 53.31±42.62 min with perineal massage and 73.27±51.28 min without perineal massage (13). Inclusion criteria include primigravida of age 18-35 years, presenting at gestational age >32 weeks (on antenatal record). Exclusion criteria consist of females with multiple fetus, non-cephalic presentation (on ultrasound); females with BMI>35 kg/m^2, amniotic fluid index <5m or >21cm, abnormal placenta (on ultrasound), antepartum hemorrhage; females with preeclampsia (BP≥140/90 mmHg with proteinuria>+1 on dipstick method), gestational diabetes (OGTT>186 mg/dl); females with failure to labor progress, and fetal distress (on cardiotocography); females already performing Kegel exercises during pregnancy; females with perineal edema and erythematous rashes and females with body temperature >37.5°C, a large amount of prolonged uterine bleeding, reproductive tract infections, genital tuberculosis, or cervical cancer (on medical record).

.3. Data Collection Procedure

After approval from ethical review committee, 180 females fulfilling the selection criteria will be enrolled in the study through OPD. Informed consent will be taken. Demographics including like name, age, BMI, gestational age, booking status, occupation, lifestyle, will also be obtained. Then females will be randomly divided in two groups by using lottery method. In group A, females will be advised pelvic floor message. Massage will be done twice, 1st when patient is 4cm to 10 cm dilated for 10 minutes and 2nd when patient is fully dilated for 10 minutes. One to two fingers will be introduced 3–4 centimeters into the vagina and a downward and sidewards pressure will be used. Olive oil will be used as a lubricant during massage. First message will be given by researcher. In group B, females will be given routine care. At time of delivery, duration of second stage of labor will be noted (as per operational definition). Females will also be screened for perineal trauma or episiotomy.

.4. Data Analysis

The collected data will be analyzed statistically by using SPSS version 26. Normality will be checked by Shapiro-Wilk test. Quantitative variables like age, BMI, gestational age, duration of second stage of labor, will be presented in form of mean and SD. Qualitative variables like booking status, occupation, lifestyle, perineal trauma, and

episiotomy will be presented in form of frequency and percentage. Both groups will be compared for mean duration of second stage of labor, by using independent samples t-test and for perineal trauma, and episiotomy by using chi-square test taking p-value <0.05 as significant. Data will be stratified for age, BMI, gestational age, booking status, occupation, and lifestyle. Post-stratification, both groups will be compared for mean duration of second stage of labor, by using independent samples t-test and for perineal trauma, and episiotomy by using chi-square test taking p-value <0.05 as significant in each stratum.

3. RESULTS AND DISCUSSION

Table 1 presents the baseline demographic and clinical characteristics of the study participants. The mean age was 24.8 ± 3.6 years in the perineal massage group and 25.1 ± 3.9 years in the routine care group ($p = 0.62$). BMI averaged 24.5 ± 2.3 kg/m² and 24.9 ± 2.1 kg/m² in the respective groups ($p = 0.35$). Gestational age at delivery was comparable between groups (38.4 ± 1.2 weeks vs. 38.5 ± 1.3 weeks; $p = 0.67$). No differences were noticed in booking status, residence or occupation in the groups suggesting successful randomization and homogeneity of baseline characteristics. These results are consistent with the earlier research that stressed the need for comparable baseline data in clinical trials to deliver valid results. For example, a study by Stamp et al (2001) pointed out the need for balanced demographic characteristics to correctly measure the effects of perineal massage during childbirth [**15**]. Similarly, Labrecque et al. (2001) reported that demographic such as age and BMI had no major impact on perineal massage efficiency therefore supporting uniformity of our results [**16**]. In addition, a study conducted by Mei-dan et al. (2008) revealed that perineal massage was highly effective at reducing duration of the second stage of labor regardless of maternal age and BMI, making our results generalizable [**17**].

As can be seen from the **Table 2**, the mean duration of the second stage of labor was significantly shorter in the perineal massage group (52.5 ± 15.4 minutes) than in the routine care group (72.3 ± 20.1 minutes; $p < 0.001$). The incidence of perineal tears was reported in the perineal massage group (8.9%) than in the routine care group (20%; $p = 0.036$). Further, the need for episiotomy was much lower (42.2% vs 72.2% in routine care group; $p < 0.001$). These results confirm what has been reported in several studies. Using randomized controlled trial research conducted by Beckmann and Stock (2014) has shown perineal massages, during the second phase of labor, were proven to be efficient in preventing perineal trauma during delivery [**18**]. A similar finding was reported by Aquino et al. (2020) concluded from a systematic review and meta-analysis that perineal massage considerably reduces the incidence of episiotomies and shortens the second stage of labor duration [**19**]. Furthermore, research by Leon-Larios et al. (2017) revealed, that prenatal perineal massage and Kegel exercises strongly contribute to the decrease of episiotomy rates and perineal pain during puerperium [**13**].

Table 3 presents the stratified analysis of the duration of the second stage of labor stratified by age and BMI. For the participants ≤25 years, the mean duration of perineal massage group was 50.1 ± 14.8 minutes, significantly shorter than the routine care group (71.6 ± 18.5 minutes, $p < 0.001$). For those aged >25 years, the durations were 54.9 ± 16.0 minutes and 73.0 ± 21.4 minutes, respectively ($p < 0.001$). Participants with BMI <25 kg/m² in the perineal massage group had mean duration 49.7 ± 13.5 minutes compared to 70.5 ± 19.2 minutes in routine care group ($p<0.001$). For BMI ≥25 kg/m², the durations were 55.6 ± 15.9 minutes and 73.9 ± 20.9 minutes, respectively ($p < 0.001$). Such results indicate

that perineal massage is helpful to individuals from different age groups and BMI categories. This corresponds to findings from a study by Aasheim et al. (2017) who found that perineal massage significantly reduced time in the second stage of labor regardless of mother's age and BMI [**6**]. Also, Eogan et al. (2006) conducted an observation on the benefits of perineal massage and Kegel exercises to perineal integrity for different demographic group (20). Besides, a research by Beckman and Garrett (2006) highlighted the universal advantage that perineal massage presents, in that it has been found to be useful for minimizing perineal trauma in a wide range of populations [**3**].

Table 4 shows cross tabulation of perineal tear and episiotomy occurrence. In the perineal massage group 42.2% had episiotomy, 8.9% had perineal tears, 3.3% had both, and 54.4% had neither. On the contrary, the routine care group had higher rates: 72.2% had episiotomy, 20% perineal tears, 13.3% both, and only 14.5% neither. It appears that perineal massage has a protective effect against perineal trauma. These results agree with a study by Abdelhakim et al. (2020), who showed that prenatal perineal massage significantly reduced the incidence of episiotomy and perineal tears (10). Also, according to Mei-dan et al. (2008), women who performed perineal massage had a reduced risk of perineal trauma during childbirth [**17**]. Also, a study conducted by Stamp et al. (2001) stressed the importance of perineal massage in maintaining perineal integrity, thus reducing the need for episiotomy and the occurrence of perineal tears [**15**].

4. CONCLUSION

This randomized controlled trial proves that antenatal perineal massage greatly improves labor outcomes in primigravida women when compared to routine care. Women in the massage group had a significantly shorter second stage of labor, fewer perineal tears and lower episiotomy needs. The benefits were generalizable across subgroups stratified by age and BMI as they remained uniform. Notably more than half of the women who received the perineal massage delivered with an intact perineum and did not find it necessary to have an episiotomy, indicating the protective nature of the technique. In contrast, routine care was associated with much higher rates of perineal trauma and surgical intervention as well. Considering its simplicity and non-invasive nature, favorable outcomes, perineal massage should be advocated as an important component of antenatal care counseling for primigravida women. Integrating this low-cost intervention into routine practice may reduce maternal morbidity, improve postpartum recovery and minimize hospital burden from perineal complications. Further large-scale population studies are recommended to confirm these findings and support a wide scale implementation.

Acknowledgments: The authors acknowledge the Department of Obstetrics and Gynaecology, Lady Willingdon Hospital, Lahore, for providing research facilities.

Author(s) Contribution: Supervision, Z. Jawad; methodology and analysis, N. Kanwal.

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical Approval: Approval for this study was taken from Lady Willingdon Hospital ethical committee, Department of Obstetrics and Gynaecology, dated July 15th , 2024.

Conflict of Interest: The authors declare no potential conflict of interest.

Consent for Publication: All authors approved the manuscript for publication.

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Tables and figures

Table 1: Baseline Demographic and Clinical Characteristics of Study Participants

Characteristic	Perineal Massage (n = 90)	Routine Care (n = 90)	p-value
Age (years)	24.8 ± 3.6	25.1 ± 3.9	0.62
BMI (kg/m²)	24.5 ± 2.3	24.9 ± 2.1	0.35
Gestational Age (weeks)	38.4 ± 1.2	38.5 ± 1.3	0.67
Booking Status			
Booked (%)	60 (66.7%)	62 (68.9%)	0.75
Unbooked (%)	30 (33.3%)	28 (31.1%)	
Residence			
Urban (%)	40 (44.4%)	38 (42.2%)	0.81
Rural (%)	50 (55.6%)	52 (57.8%)	
Occupation			
Housewife (%)	68 (75.6%)	70 (77.8%)	0.72
Working (%)	22 (24.4%)	20 (22.2%)	

Table 2: Comparison of Outcomes Between Perineal Massage Group and Routine Care Group (n = 180)

Outcome Measure	Perineal Massage Group (n = 90)	Routine Care Group (n = 90)	p-value
Mean Duration of 2nd Stage (minutes)	52.5 ± 15.4	72.3 ± 20.1	< 0.001 ✱
Perineal Tear (%)	8 (8.9%)	18 (20%)	0.036 ✱
Episiotomy Required (%)	38 (42.2%)	65 (72.2%)	< 0.001 ✱

✱ *Statistically significant ($p < 0.05$)*

Table 3: Stratified Analysis Based on Age and BMI

Variable	Subgroup	Group A: Perineal Massage (Mean ± SD / %)	Group B: Routine Care (Mean ± SD / %)	p-value
Age (Years)	≤25	50.1 ± 14.8 (n = 45)	71.6 ± 18.5 (n = 44)	< 0.001
	>25	54.9 ± 16.0 (n = 45)	73.0 ± 21.4 (n = 46)	< 0.001
BMI (kg/m²)	<25	49.7 ± 13.5 (n = 50)	70.5 ± 19.2 (n = 48)	< 0.001
	≥25	55.6 ± 15.9 (n = 40)	73.9 ± 20.9 (n = 42)	< 0.001

Table 4: Cross-tabulation of Perineal Tear and Episiotomy in Both Groups

Group	Episiotomy Done	Perineal Tear Present	Both Present	Neither Present	Total (n)
Perineal Massage	38 (42.2%)	8 (8.9%)	3 (3.3%)	49 (54.4%)	90
Routine Care	65 (72.2%)	18 (20%)	12 (13.3%)	13 (14.5%)	90

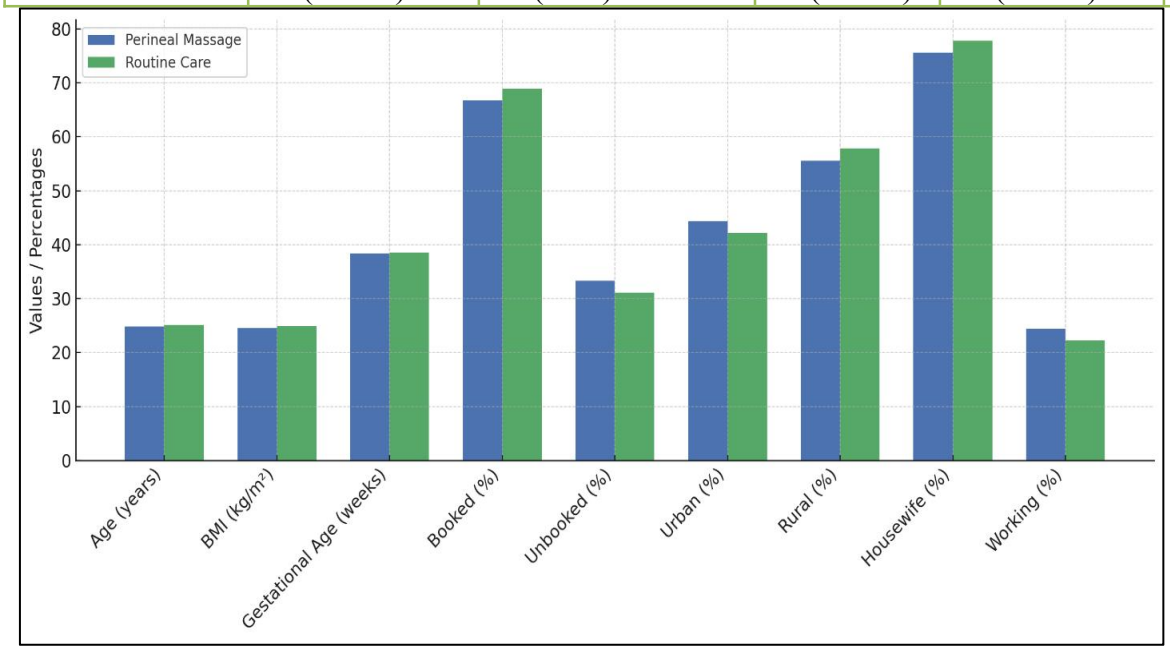

Figure 1: Comparison of baseline demographic and clinical characteristics between the perineal massage and routine care groups

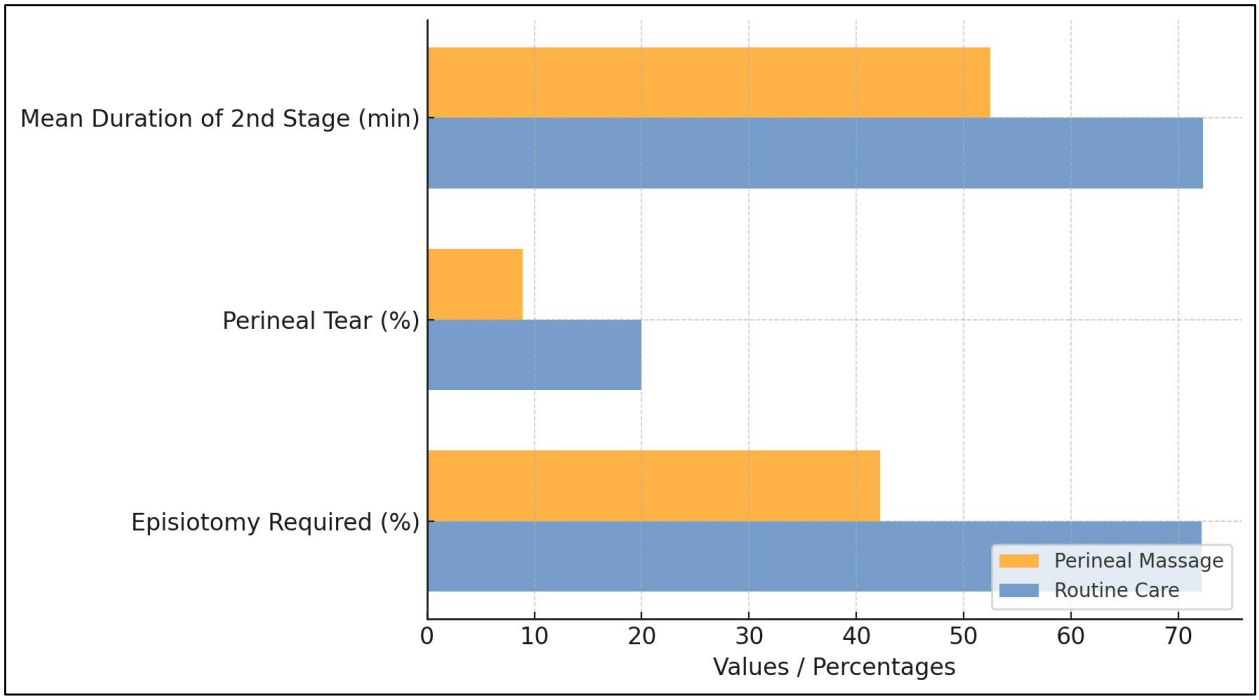

Figure 2: Horizontal bar comparison of key labor outcomes—mean duration of second stage, perineal tear rate, and episiotomy rate—between the perineal massage and routine care groups.

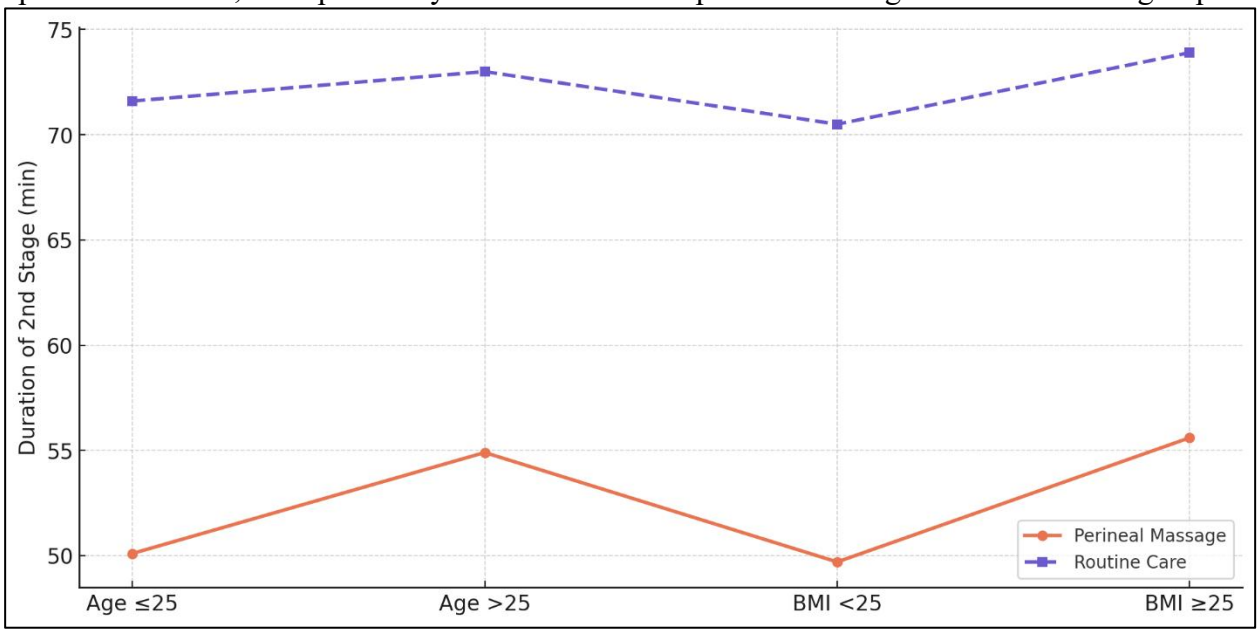

Figure 3: Stratified comparison of second-stage labor duration by age and BMI between the perineal massage and routine care groups, using subgroup-specific means

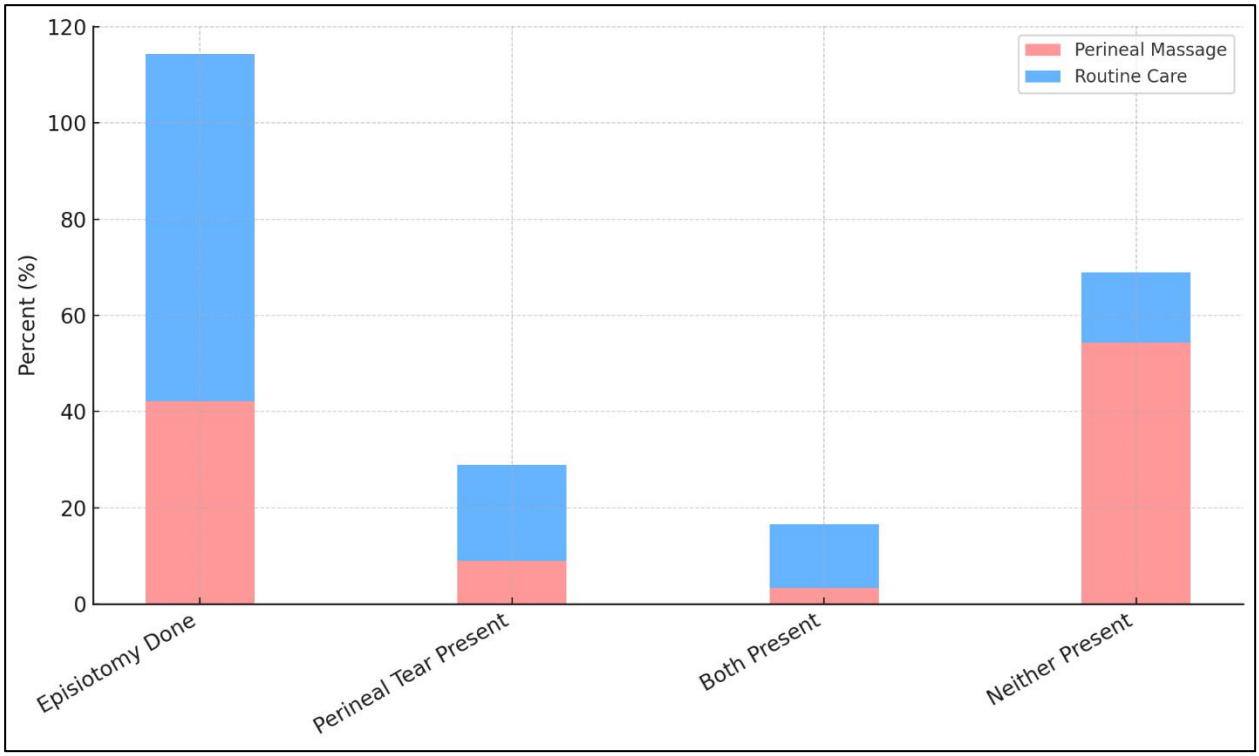

Figure 4: Distribution of episiotomy, perineal tear, both injuries, and intact perineum among participants in the perineal massage and routine care groups