



## Who may accompany the parturient to the delivery room?

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### Abstract

**Objective** To assess the association of the attendant of the parturient (husband or mother or both), on labor duration, mode of delivery, maternal and neonatal complications.

**Study design** A retrospective cohort study, over a 4-year period, of women admitted to the delivery room accompanied by their husband, their mother or both. Medical records were reviewed for demographic, medical and obstetrical history.

**Results** Overall, 3029 patients were included, 2192 were accompanied by their husband; 127 were accompanied by their mother and 710 were accompanied by both. Women accompanied by their husbands were significantly older and more likely to be multiparous than women accompanied by their mother (30.2 years vs. 27.8 years,  $P < 0.001$  and 60% vs. 48.8%,  $P = 0.02$ , respectively). Compared to women supported during labor by their mothers, women supported only by their husbands spent less hours in the delivery room (from admission to delivery) (11.1 h vs. 13.7 h,  $P = 0.02$ ). While the nature of the attendant had no influence on the mode of delivery among nulliparous women ( $p = 0.13$ ), multiparous women supported by the mothers had a significantly higher rate of cesarean delivery compared to those supported only by their husband or by both (OR = 2.07, 95% CI = [1.317–3.246],  $P = 0.002$ , OR = 3.33, 95% CI = [1.623–6.849],  $P = 0.001$ , respectively).

**Conclusions** Women supported by their mothers during labor have a longer second stage of labor, a decreased rate of vaginal delivery and an increased risk for cesarean delivery compared to women supported by their husbands. Future large prospective studies are needed to confirm our observation and to find causative affect.

**Keywords** Labor · Attendant · Parturient · Multiparous · Cesarean delivery

### Introduction

Labor is one of the most important events in a woman's life; it is a highly emotional and subjective experience. The experience of childbirth plays a major role in developing positive self-esteem by first-time mothers, positive emotions for the baby and an easier adjustment to motherhood [1, 2]. The

first labor experience will also affect future childbirth experiences [2]. To provide better individual support to women during childbirth, health care providers are required to be attentive to psychosocial aspects, without neglecting medical safety [3, 4]. In all cultures, childbirth is considered a period of great vulnerability for a woman, thus support systems are an essential component of the birthing experience. Birth attendants are an integral part of childbirth [5]. It has been reported that the presence of a family member or a friend, even just by being at the same room with the woman, has contributed to a positive intrapartum experience [6]. The woman's choice for accompanier tends to be based upon personal familiarity, ability of that person to support her emotionally and the desire to be a part of the birthing experience [6]. In most cultures, a specialized medical attendant (e.g., midwife or physician) is present at every birth; however, many countries, including the USA, Canada, and some countries in Western and Northern Europe allow the presence of husbands, partners, or close relatives to provide support

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during labor and delivery [7–10]. In Mexico and parts of Latin America and Africa, female relatives or friends attend to comfort and support women during labor [11, 12]. Several randomized trials have shown that women who are supported during labor—by a female relative [11, 13–15], a partner (e.g., husband) [7, 16], or a doula [12–15],—experience less anxiety, have more spontaneous deliveries, require less anesthesia, and need fewer medical interventions.

Yet, no study has evaluated who is the best person to accompany the parturient during labor. In this study, we assess the impact of different attendants (partner or mother or both) on labor duration, mode of delivery, maternal and neonatal complications.

## Methods

We conducted a retrospective cohort study, of women admitted to the delivery room between January 2012 and June 2016 in an academic tertiary center with approximately 3600 annual deliveries. The hospital provides services to a heterogeneous population, urban and non-urban of different socioeconomic classes. Data were collected from computerized registries that also stated which attendant was accompanying the parturient during labor.

Our departmental policy is to allow up to two attendants in labor and delivery room.

Inclusion criteria included women who delivered at our hospital while accompanied by their partner, mother or both. Exclusion criteria included women who delivered by a planned cesarean delivery (CD), or women who were not accompanied by their partner or their mother. Based on our inclusion criteria, women were divided into three groups based on their attendant; partner, mother or both. The study was approved by the local research committee.

Medical records were reviewed for demographic, medical and obstetrical history, including: age, parity, duration of second stage of labor, the use of epidural anesthesia, delivery mode, adverse maternal outcome including: postpartum hemorrhage (PPH), 3rd or 4th degree perineal tear and adverse neonatal outcomes including arterial cord pH < 7.1, 5 min Apgar score 7.

## Statistical analysis

Descriptive statistics in terms of mean, standard deviations, median, percentiles and ranges were performed on all parameters in the study. Differences between the three groups (partner, mother and both) in the quantitative parameters were tested by one-way ANOVA with Scheffe test. Categorical parameters were tested by Pearson Chi-square test and Fisher exact test. Multivariate logistic regression analysis was used to determine the association between the mode of delivery and independent variables.  $P < 0.05$  was considered as significant. SPSS software version 21 was used for the statistical analysis. Sample size calculation of at least 200 partners would provide a power of 80%, 5% type one error to detect 85% rate of vaginal delivery when the partner was present in the delivery room [17].

## Results

Overall, 3029 patients were included in the study, of which 2192 (72.3%) were accompanied by their partner; 127 (4.2%) were accompanied by their mother and 710 (23.4%) were accompanied by both; the partner and the mother. Basic characteristics of each group are shown in Table 1. Women accompanied by their partners were significantly older and with higher parity than women accompanied by

**Table 1** Baseline characteristics of each group

	Both mother and partner, $N = 710$	Mother only, $n = 127$	Partner only, $n = 2192$	$P$ value
Maternal age	$27.5 \pm 4.6$	$27.8 \pm 5.6$	$30.2 \pm 5.06$	$< 0.001$ [1, 2]
Partner age	$30.7 \pm 5.2$	$32.2 \pm 6.6$	$33.5 \pm 5.8$	<sup>a</sup> 0.039 <sup>b</sup> $< 0.0001$ <sup>c</sup> 0.059
Gestational age	$39.47 \pm 1.79$	$38.95 \pm 2.60$	$39.39 \pm 1.85$	<sup>c</sup> 0.017 <sup>b</sup> 0.036
Twin pregnancy	10 (1.4%)	4 (3.1%)	24 (1.1%)	0.12
Parity				
1	393 (55.4%)	65 (51.2%)	876 (40.0%)	<sup>a</sup> $< 0.0001$
$\geq 2$	317 (44.6%)	62 (48.8%)	1313 (60.0%)	<sup>b,c</sup> 0.02
Gravity	$1.91 \pm 1.34$	$2.08 \pm 1.36$	$2.36 \pm 1.62$	<sup>b</sup> $< 0.0001$
Epidural use	541 (76.2%)	88 (69.3%)	1521 (69.4%)	<sup>a</sup> 0.001

Statistical significant: <sup>a</sup>both mother and partner vs. mother only; <sup>b</sup>both mother and partner vs. partner only, <sup>c</sup>partner only vs. mother only

their mother (30.2 vs. 27.8,  $P < 0.001$  and 60% vs. 48.8%,  $P < 0.05$ , respectively). The rate of CD was significantly higher among women accompanied by their mother, compared to women accompanied only by their partner (24.6% vs. 13.9%,  $P < 0.0025$ ) (Table 2).

Compared to women supported by their partner, women supported by their mother had longer laboring time (from admission until delivery) (median = 13.7 h vs. 11 h,  $P < 0.05$ ). Furthermore, when both; the partner and the mother were in labor and delivery room, the duration of the second stage of labor was longer, compared to the presence of solely the partner (median 0.77 h vs. 0.6 h,  $P = 0.012$ ). No difference between groups was observed regarding maternal adverse outcome including (Table 3). We found a higher rate of 5-min Apgar score below 7 when women were accompanied solely by their mother compared to women accompanied by their partner (4% vs. 0.6%,  $P < 0.01$ ) (Table 3).

Multivariable logistic regression analysis was calculated to assess the association between mode of delivery and the attendant of the parturient, while adjusting for potential confounders, including: age, parity, and epidural use (Table 4). For nulliparous women, there was no association between the type of the accompanier during labor and mode of delivery. However, in multiparous women, those accompanied by their mother (with or without the partner) were associated with increased risk of CD. There was no association between the attendant of the parturient and labor duration (Table 4).

**Table 2** The rate of the different mode of delivery in each group

Mode of delivery	Both mother and partner	Mother only	Partner only	<i>P</i> value
VD+VE	619 (87.2%)	95 (75.4%)	1884 (86.1%)	<sup>a</sup> 0.0014
Cesarean delivery	91 (12.8%)	31 (24.6%)	305 (13.9%)	<sup>c</sup> 0.0025

VD vaginal delivery, VE vacuum extraction

Statistical significant: <sup>a</sup>both mother and husband vs. mother only; <sup>b</sup>both mother and husband vs. husband only; <sup>c</sup>husband only vs. mother only

**Table 3** Maternal and neonatal adverse outcome in each group

	Both mother and partner	Mother only	Partner only	<i>P</i> value
PH	7.24 ± 0.07	7.25 ± 0.07	7.24 ± 0.08	0.63
1-min Apgar	8.64 ± 1.36	8.48 ± 1.77	8.76 ± 1.11	<sup>b</sup> 0.042
5-min Apgar	9.60 ± 1.32	9.32 ± 1.90	9.68 ± 1.11	<sup>b</sup> 0.005
Postpartum hemorrhage	19 (2.7%)	4 (3.1%)	34 (1.6%)	0.089
Fetal distress	49 (6.9%)	10 (7.9%)	126 (5.7%)	0.37
Perineal tear 3rd and 4th degree	5 (0.7%)	–	18 (0.8%)	0.57

Statistical significant: <sup>a</sup>both mother and partner vs. mother only; <sup>b</sup>both mother and partner vs. partner only; <sup>c</sup>partner only vs. mother only

**Table 4** Multivariate analysis of factors associated with CD in multiparous

	<i>P</i> value	Odds ratio	95% confidence interval for odds ratio	
			Lower	Upper
Epidural use	<0.000	1.852	1.336	2.568
Maternal age	<0.000	1.068	1.033	1.103
Mother vs. mother and partner	0.006	2.911	1.358	6.240
Mother vs. partner	0.002	2.86	1.45	5.64

## Discussion

The current study aimed to assess the effect of different attendant of the parturient during labor on mode of delivery, labor duration, and maternal and neonatal adverse outcome. Our main findings were as followed: (1) after adjusting for confounders, women accompanied by their mother (with or without the partner) were more likely to have a CD than women accompanied solely by their partner; however, this association was evident only among multiparous women; (2) women accompanied by their mother had a longer second stage of labor and a longer labor duration, compared to women accompanied solely by their partner; and (3) we found no association between the type of accompanier during labor and maternal or neonatal adverse outcomes.

Previous studies have shown that the importance of a positive birthing experience is an integral part of maternal and neonatal well-being [18–20]. Moreover, the emotional support during labor can reduce the use of oxytocin [21], rate of forceps-assisted delivery [21], and the rate of CD [21, 22].

In the present study, we found that diverse attendants may affect mode of delivery. The rate of CD was significantly higher among women accompanied by their mother, compared to women accompanied by their partner. It is unclear whether it is the presence of the mother which may be stressful for the parturient, or that women who need

their mother to support them during labor already has a higher level of anxiety. Research into women's experiences of this phenomenon is scarce. Due to ethical issues, it is impossible to conduct a prospective randomized controlled trial to evaluate the casualty of this situation.

We found that women accompanied by their partner had a shorter labor duration, and second stage of labor specifically, than those accompanied by their mother. Emotional support has been shown to result in a shorter length of labor [21, 23–25]. Several studies (reference) have demonstrated that providing this emotional support by the partner may help to alleviate stress and fears, promote strength, endurance, comfort and security, help distract from the pain, and in line with our findings may contribute to a more satisfactory birth experience and a shorter duration of labor [7, 20, 26].

Social support during labor has been shown to have a positive effect on Apgar scores [27–29]. We demonstrated an increased risk of 5-min Apgar score below 7 when women were accompanied by the mother as opposed to women accompanied solely by their partner. However, after adjusting for confounders, this association was no longer effective. It might be that the higher rate of CD in women accompanied by their mother contributed to the lower 5-min Apgar scores. There were only ten cases of 5-min Apgar score below 7; therefore, the statistical power was limited by the small size of this subgroup. Of note, there was no difference in cord pH between the three groups.

The main limitation of our study is its retrospective nature. However, due to ethical issues it may be difficult to conduct a prospective randomized controlled trial to evaluate the casualty of this situation. Nevertheless, our study represents the first large series addressing the impact of the different attendants of the parturient on mode of delivery and adverse outcomes. The accompanier has a tremendous effect on one of the most important and amazing experiences a woman have during life. Understanding that provides a vital perspective on the ways in which attendants can best engage in the childbirth experience and provide support to support women, help increasing the chances for a vaginal delivery and better birth outcomes. Further prospective studies are required to assess gaps in care for women giving birth, and the individuals supporting them, to improve service provision in this area.

**Author contributions** EKP: protocol/project development, data collection or management, data analysis, and manuscript writing/editing. NM: manuscript writing/editing. DV: manuscript writing/editing. IB: data collection or management. SS: data analysis. MD: data collection or management. EL: data analysis. SS: data analysis. RG: manuscript writing/editing.

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## Compliance with ethical standards

**Conflict of interest** The authors report no conflict of interest.

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