Companionship during Labour Promotes Vaginal Delivery and Enhances Maternal Satisfaction

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Objective: To compare women in labour with or without a companion in terms of obstetric and neonatal outcomes and maternal satisfaction.
Methods: A total of 450 Hong Kong Chinese women carrying a singleton pregnancy in cephalic presentation at term were prospectively recruited from February to July 2013. Their wish for companionship was verified upon active labour, and the companion was invited to the delivery suite. Obstetric and neonatal outcomes, breastfeeding practice, and maternal satisfaction were evaluated.
Results: Of the recruited women, 416 (92%) delivered at our hospital, and 269 of them opted for companionship. More nulliparous than multiparous women opted for companionship ($p<0.001$). Among multiparous women, those with a companion resulted in more vaginal and instrumental deliveries and fewer Caesarean sections than those without ($p=0.05$). Women with or without a companion were comparable in terms of the duration of first or second stage of labour, time from analgesics to birth, need for analgesics, volume of syntocinon infusion, maternal complications, and fetal outcome. 315 (76%) women completed the postnatal questionnaire on maternal satisfaction; the companion group was more satisfied with the compassionate care and emotional support during their childbirth experience ($p=0.04$).
Conclusion: A companion of choice during labour had a positive influence on the vaginal delivery rate and maternal satisfaction. Women should be informed about the benefits and offered the option of companion support during labour.
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Introduction

Childbirth is a stressful physical and psychological experience. According to the fear-tension-pain cycle[1], excessive anxiety increases endogenous release of catecholamine and thus reduces blood flow to and from the placenta, restricts fetal oxygen supply, reduces the effectiveness of uterine contractions, and slows labour progress[2]. We hypothesised that adequate support to labouring women is related to a shorter duration of labour and a higher level of maternal satisfaction.

There are cultural differences in the provision of support during childbirth. In the US and the UK, husbands, partners or close relatives are the main supporters during labour. In addition, a doula, a labour companion specialist, is advocated to guide effective support. In many other countries, they are excluded from the delivery room, and companionship during labour (CDL) is uncommon. In Hong Kong, CDL has been advocated for the past decade[3]. This study aimed to assess its efficacy in terms of obstetric and neonatal outcomes and maternal satisfaction by comparing women with or without a companion during labour.

Methods

Participants

A prospective cohort of Chinese women carrying a singleton pregnancy in cephalic presentation at term was recruited at a Hong Kong regional hospital between February 2013 and July 2013. Women were excluded if they had a fetus in non-cephalic presentation, multiple birth, were scheduled for elective Caesarean section or of non-Chinese ethnic origin. Women were approached for recruitment when attending the antenatal clinic or when admitted to the hospital for delivery.

When the women commenced active labour, their wish for companionship was verified and the chosen person

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was invited into the delivery suite. The companion could be her partner, mother or sibling. Companionship was allowed throughout the first, second, and third stage of labour. The companion might be required to leave the suite briefly during vaginal examinations; or companionship might be terminated when instrumental delivery or Caesarean section became necessary, or when unexpected complications occurred. In both groups, standardised medical care was provided during labour as per protocol, including active management of labour, early amniotomy, use of oxytocin, continuous fetal heart monitoring, and options for analgesia.

Sample Size Calculation

Based on the Cochrane database of systematic reviews, supported women are more likely to have a shorter duration of labour, with a mean difference of -0.58 (95% CI, -0.85 to -0.31) hours. To detect the lowest possible difference, we assumed 0.3 ± 1.0 as our anticipated difference in the duration of labour, with an alpha value of 0.95 and a power of 80%. The calculated sample size required was 176 cases per group.

Data Collection

Demographic data were collected upon enrolment. Obstetric and neonatal outcomes were recorded during labour. The primary outcome was duration of labour, defined as total minutes from start of active labour, i.e. cervical dilatation ≥3 cm, to delivery of the baby. The secondary outcomes included mode of delivery, duration of second stage of labour, time from analgesics to birth, additional analgesics used, volume of syntocinon used, and maternal complications including fetal distress, primary postpartum haemorrhage (blood loss >500 ml), and severe perineal injury (third or fourth degree perineal tears). Neonatal outcomes included Apgar score at first and fifth minute, duration of infant hospitalization, and breastfeeding practice upon maternal discharge.

Maternal satisfaction was assessed using a self-administered questionnaire at around 48 hours post-delivery in the postnatal ward. The questionnaire was translated and developed based on six simple questions with good internal consistency[4]. The modified questionnaire contained nine questions using ratings of agreement or disagreement on a 10-point scale to assess multidimensional aspects of satisfaction, including adequacy of information, ability to express own needs, involvement in decision making, compassionate care, attention to needs, emotional support, level of pain, maternal newborn bonding, and an overall satisfaction score.

Ethical Consideration

This study was approved by the hospital research ethics committee prior to recruitment. Written informed consent was obtained from each participant.

Data Analysis

Statistical analysis was performed with the Statistical Package for the Social Sciences Windows version 15.0 (SPSS, Chicago [IL], US). Means and standard deviations were calculated for continuous variables. Student's *t* test was used to compare means between groups, and Chi-square test or Fishers exact test was used to compare proportions between groups. A p value of <0.05 was considered statistically significant.

Results

A total of 450 eligible women were invited to participate. 416 (92%) of them delivered at our hospital and their obstetric and neonatal outcomes were recorded. Of them, 269 opted for CDL; 98% chose their husband/partner to be their companion, and the rest chose their mother, mother-in-law, or sister. 34 women who delivered elsewhere had no perinatal data available for analysis. 14 women who opted for CDL but eventually had no companionship were allocated to the no companion group. The most common reason was rapid labour such that the partner could not arrive in time.

Demographic and obstetric characteristics are shown in Table 1. The overall mean maternal age was 30.5 years old. Over 95% of women were married and completed secondary school or above. Women with or without a companion were comparable in terms of maternal age, marital status, education level, gestational weeks, type of onset of labour, and birth weight. More nulliparous than multiparous women opted for companionship ($p<0.001$). Overall, three-quarters of women had spontaneous onset of labour; the remaining had induced labour owing to post-term, gestational diabetes, pregnancy induced hypertension, or fetal growth restriction. The overall mean birth weight was 3295 grams.

Regarding obstetric outcomes, women with or without a companion were comparable in the duration of the first and second stage of labour and the time from analgesics to birth (Table 2). Among multiparous women, those with a companion resulted in more vaginal and instrumental deliveries and fewer Caesarean sections than those without ($p=0.05$). The indications for Caesarean section included cephalopelvic disproportion, prolonged latent phase, and fetal distress. Women with or without

Table 1. Baseline demographics and clinical characteristics*

Characteristic	Companionship during labour		
	Yes (n=269)	No (n=147)	p Value
Age (years)	30.3 ± 5.2	31.0 ± 5.9	0.2
Marital status			0.173
Married	255 (94.8)	145 (98.6)	
Never married	11 (4.1)	2 (1.4)	
Divorced / separated	3 (1.1)	0	
Education level			0.16
Primary	5 (1.8)	6 (4.1)	
Secondary	192 (71.4)	105 (71.4)	
Tertiary	72 (26.8)	36 (24.5)	
Parity			<0.001
Nulliparous	181 (67.3)	65 (44.2)	
Multiparous	88 (32.7)	82 (55.8)	
Gestational age (weeks)			0.78
37 to 39+6	137 (50.9)	72 (49.0)	
40 to 41+6	132 (49.1)	75 (51.0)	
Onset of labour			0.49
Spontaneous	199 (74.0)	114 (77.6)	
Induced	70 (26.0)	33 (22.4)	
Neonatal birth weight (g)	3322 ± 396	3246 ± 416	0.07

* Data are shown as mean ± standard deviation or No. (%) of subjects, unless otherwise specified

a companion were comparable in the need for pethidine, epidural anaesthesia, and total dose of syntocinon infusion, as well as the estimated blood loss and complications such as primary postpartum haemorrhage, fetal distress, and severe perineal injury.

Overall, few neonates had an Apgar score ≤7 at first minute (Table 3), and all neonates had an Apgar score >7 at fifth minutes. Most neonates were discharged within 5 days of delivery. The main reason for a longer stay was clinical sepsis that required a full course of intravenous antibiotics. Four babies stayed over 10 days, owing to low birth weight (1.8 kg) in two, poor feeding secondary to laryngomalacia in one, and neonatal narcotic withdrawal syndrome in one. The companion group had a slightly higher breastfeeding rate upon discharge (88.1% vs. 82.3%, p=0.11).

315 women completed the postnatal questionnaire on maternal satisfaction; the response rate was 76%. The companion group scored higher in domains of compassionate care and emotional support (p=0.04, Table 4). Among the 214 women who had CDL, 204 (95%) opted to have CDL in their subsequent labour in future. Among the remaining 14 women, the mean duration of labour was 288 (range, 85-618) minutes. One woman underwent Caesarean section for cephalopelvic disproportion, two had low forceps delivery for prolonged second stage, and the remaining 11 had a normal vaginal delivery. Two women had postpartum haemorrhage; their infants had a hospital stay >5 days due to neonatal fever.

Discussion

In 2013, the Cochrane review summarized the results of 22 randomized controlled trials that included 15288 women with labour support or routine care[5], but no study included a dominant Chinese population. Our study aimed to determine Hong Kong Chinese women's perception of CDL and its effects on perinatal outcomes and maternal satisfaction. Around two-thirds of women opted for CDL; more nulliparous than multiparous women opted for companionship (p<0.001). Without prior delivery experience, nulliparous women might be more anxious. According to our previous study on attitudes and expectations in CDL, 96% of women considered emotional

Table 2. Comparison of obstetric outcomes between groups*

Obstetric outcome	Nulliparous women			Multiparous women		
	Companion (n=181)	No companion (n=65)	p Value	Companion (n=88)	No companion (n=82)	p Value
Duration (mins)						
First stage	395 ± 156	360 ± 197	0.10	201 ± 106	190 ± 106	0.60
Second stage	48 ± 59	39 ± 42	0.33	10.8 ± 9.4	10.7 ± 10.7	0.98
First and second stage	437 ± 174	410 ± 225	0.24	212 ± 109	201 ± 109	0.62
Analgesics to birth	335 ± 208	283 ± 234	0.13	113 ± 110	108 ± 122	0.84
Mode of delivery						
Vaginal	107 (59)	43 (66)	0.14	82 (93)	73 (89)	0.05
Instrumental	44 (24)	16 (25)		6 (7)	4 (5)	
Caesarean	30 (16)	6 (9)		0	5 (6)	
Interventions						
Use of pethidine	58 (32)	16 (25)	0.26	9 (10)	4 (5)	0.19
Epidural anaesthesia	17 (9)	3 (5)	0.23	0	2 (2)	0.23
Sytocinon (ml)	61 ± 81	52 ± 76	0.42	12 ± 25	15 ± 35	0.51
Complication						
Blood loss (ml)	289 ± 219	262 ± 189	0.37	186 ± 131	185 ± 142	0.95
Postpartum haemorrhage	24 (13)	8 (12)	0.84	3 (3)	4 (5)	0.71
Fetal distress	20 (11)	7 (11)	1	5 (6)	3 (4)	0.72
Severe perineal injury	0	1 (2)	0.26	2 (2)	0	0.50

* Data are shown as mean ± standard deviation or No. (%) of subjects, unless otherwise specified

Table 3. Comparison of neonatal outcomes and breastfeeding between groups*

Neonatal and breastfeeding outcome	Companion (n=269)	No companion (n=147)	p Value
Apgar score at first minute			0.51
8-10	261 (97.0)	145 (98.6)	
≤7	8 (3.0)	2 (1.4)	
Infant stay			0.48
<5 Days	225 (83.6)	127 (86.4)	
≥5 Days	44 (16.4)	20 (13.6)	
Feeding upon discharge			0.11
Full breastfeeding	237 (88.1)	121 (82.3)	
Artificial alone	32 (11.9)	26 (17.8)	

* Data are shown as No. (%) of subjects, unless otherwise specified

support as the major element, whereas other elements of CDL included decision making together (52%) and physical support (31%)[6].

The duration of labour was our primary outcome. In the Cochrane review, a shorter labour was demonstrated in supported women[5]. In our study, the duration of labour did not differ significantly between the two groups. This discrepancy may have been due to a difference in the identity of the supporting person. The Cochrane review included hospital staff and trained doula; trained personnel were more knowledgeable of delivery routine and may contribute to a more effective labour process. Although some companions in our study had attended childbirth

Table 4. Comparison of maternal satisfaction score between groups

Maternal satisfaction	Companion (n=214)	No companion (n=101)	p Value (2-tailed)
Information received	8.25	7.98	0.22
Ability to express needs	8.24	7.89	0.12
Involvement in decision making	8.05	7.74	0.22
Compassionate care	8.34	8.22	0.04
Needs addressed	8.35	7.99	0.11
Overall satisfaction score	8.14	7.86	0.22
Emotional support	8.11	7.61	0.04
Level of pain	6.42	6.25	0.62
Maternal newborn bonding	8.70	8.62	0.67

education classes, they typically had little or no experience of labour and delivery. In addition, male companions spend significantly less time and are physically farther away from the labouring women than doulas[7]. When the labour pain increases, companions can become more anxious, uncomfortable, exhausted and even wish to leave the delivery suite. Advice should be given to the companions about delivery suite routines, effective actions that most women consider supportive during labour, appropriate activities and behaviours that may shorten the duration of labour.

The Cochrane review also observed that women who received continuous support were more likely to have a spontaneous vaginal birth (relative risk [RR]=1.08, 95% confidence interval [CI]=1.04-1.12), and less likely to have a Caesarean section (RR=0.78, 95% CI=0.67-0.91) or instrumental vaginal birth (RR=0.90, 95% CI=0.85-0.96)[5]. This was concordant with the Millennium Cohort study that supported mothers were less likely to require an emergency Caesarean section (12.6% vs. 27.6%, p<0.001)[8]. In our study, multiparous women with a companion had a significantly higher rate of vaginal delivery and a lower rate of Caesarean section than those without a companion. It has been postulated that a reduced level of endogenous catecholamine may lead to increased uterine blood flow and effective uterine contractions promoting spontaneous vaginal delivery[2].

CDL may limit the 'cascade of interventions'; the reduced use of epidural analgesia, synthetic oxytocin, and instrumental delivery may reduce associated morbidities[9]. In the Cochrane review, CDL had no apparent impact on maternal intrapartum interventions or neonatal complications[5]. In our cohort, the total dose of syntocinon infused, estimated blood loss, and maternal complications were similar between the two groups, as was the neonate outcome.

Psychosocial support during labour has a positive effect on the start and continuation of breastfeeding[10]. Frequency of exclusive breastfeeding 1 month after birth is significantly higher in supported women (RR=1.64, 95% CI=1.01-2.64)[11]. Our cohort demonstrated a tendency for full breastfeeding upon discharge in the supported group (88.1% vs. 82.3%, p=0.11), but the sample size was too small to detect this small difference. If we were to detect a difference of 5.8%, using standard deviation of 1.0, an alpha of 0.95 and a power of 80%, the sample size required would be 4668 per group. Better psychosocial support might speed up a mother's recovery, increase maternal-newborn bonding, and facilitate breastfeeding.

In keeping with various studies[5,12,13], a positive effect of companionship on maternal satisfaction was demonstrated in our study. The supported group perceived a higher level of emotional support and compassionate care. The presence of a companion has a positive effect in maternal self-confidence and self-control during labour and birth.

There were some limitations to this study. The sample size calculated was 176 cases per group, but only 147 women without a companion were recruited. Around two-thirds of women chose CDL; although the sample size was expanded to 450, the intended number of women without a companion still could not be reached. Randomised controlled trials may allocate sufficient women to each group, but this fails to consider the preference of women for companionship. Future studies may investigate the

women's prior delivery experience, characteristics of the companionship, the nature of the supportive role by the companion, and the duration of companionship in relation to the duration of labour.

Conclusion

Companionship during labour was associated with enhanced maternal satisfaction with the childbirth experience and more vaginal deliveries and fewer Caesarean sections in multiparous women. These findings support the practice of CDL in local Chinese women. Women should be informed about the benefits and offered the option of CDL.

Declaration

The authors have declared no conflicts of interest in this study.

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