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Effect of Doula Support on Labour Pain and Outcomes in Primiparous Women in Zahedan, Southeastern Iran: A Randomized Controlled Trial

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Abstract

Background: Labour is a natural process which is extremely painful. This study was conducted to determine the effect of doula support on labour pain and outcomes.

Method: This clinical trial was carried out in maternity wards of Zahedan and Mirjaveh, from July 2007 to May 2008. A total of 150 primiparous women who were hospitalized in labour wards were selected using a simple random sampling and were randomly divided into two groups; one group with doula support (n=75) and one control group without doula support (n=75). The control group received routine care and the doula group had an untrained doula at their bedside from the beginning of active labour to the end of the second stage of labour. The severity of pain at the beginning of active labour (4 cm cervical dilation) and at the end of the second phase of labour (10 cm cervical dilatation) was measured in both groups by means of a Visual Analogue Scale. Data in the two groups were compared using independent t- and chi-square tests.

Results: Results indicated no difference in pain severity between the two groups (p=0.447) at the beginning of active labour. However, a difference was observed at the end of the second stage of labour (p=0.001). The mean duration of the active phase was 189.32 ± 90.85 min in the doula group and 251.13 ± 75.05 min in the control group (p=0.000).

Conclusion: Considering that doula support resulted in a decrease in severity of labour pain and an acceleration of the active phases of labour, and considering that women welcomed this method for emotional support, doula support provides a cost-effective method for decreasing labour pain, anxiety and the need for caesarean section.

Keywords: Doula; Primiparous; Labour pain

Abbreviations: VAS: Visual Analogue Scale; NVD: Normal Vaginal Delivery

Background

A growing and unambiguous body of literature has demonstrated the benefits of doula support during labour for both the mother and infant and has reported the cost-effectiveness of this method [1]. Traditionally, women gave birth with the support of other women, either a family member or an experienced woman within the community. In today's society, such women are often referred to as doulas [2]. Labour support is a term used by intra-partum nurses and researchers to describe the supportive care provided to women during labour, which may be emotional support alone, or conceptualized as having various categories such as emotional support, physical comfort as well as advice and information giving [3]. Emotional support can include several types of behaviour: nursing presence, effective caring attitude, distraction and partner care. Physical support and comfort measures enhance labour progress and increase satisfaction with the birth experience. Labour support can be provided by several individuals: a family member or friend, a trained doula, an untrained doula, or a nurse-midwife [4]. The type of caregiver who provides the best support during labour has not been identified. Support by untrained women beginning in early labour and continuing into the postpartum period demonstrates the most consistent beneficial effect on labour outcomes [5]. Meta-analyses of randomized clinical trials have demonstrated that women who have continuous support during childbirth compared with their non-supported counterparts have fewer caesarean deliveries, shorter labour duration, less need for analgesia, less need for operative vaginal delivery and less 5-min Apgar scores below 7 [6]. Most women in the United States are accompanied in labour by their spouse or male partner, and women describe their partner's presence as extremely important and helpful [7]. The primary theorized mechanism of action involves the cycle of fear–tension–pain observed by Dr. Grantley Dick-Read, an early proponent of childbirth education and labour support. The theory states that pain and anxiety during labour leads to an endogenous release of catecholamines, which decrease the intensity of uterine contractions and decrease placental blood flow. Less anxiety results in decreased level of catecholamines, improved uterine contractions and a decreased risk of prolonged labour or fetal distress. Women with continuous labour support feel empowered and in control, and therefore experience less anxiety than their non supported counterparts [8]. Research also suggests that social support may not contribute directly to health outcomes but may act as a 'buffer' to protect the individual from harmful effects of one's environment in times of stress. The 'buffer' hypothesis suggests that a protective effect is achieved by preventing or decreasing the amount of psychological risk factors experienced [9]. The objective of this randomized control trial

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was to determine the effect of doula support on the severity of labour pains experienced by Iranian women in Zahedan.

Methods

This clinical trial was carried out in maternity wards of Zahedan and Mirjaveh from July 2007 to May 2008. Subjects for the study included 150 primiparous women with a single foetus, who arrived at the labour ward in active labour (4 cm cervical dilatation). The age range of the women was 18-34 years, and gestational age was 38-42 weeks. None of the women had evidence of any severe obstetric disease. Approval of the local ethical committee of Zahedan University of Medical Sciences was obtained. In addition, written informed consent was obtained from all subjects prior to the study. Subjects were selected using simple random sampling and were randomly divided into two groups: one group with doula support (n=75) and one control group (n=75). A doula was an untrained woman such as a female friend or relative (mother-in-law, mother, sister-in-law, sister) who had been selected by the mother. Women in the control group (without doula support) received routine care. To avoid contamination between the doula groups, separate labour rooms, screens between the beds or beds at opposite ends of the same room were used. The severity of pain was measured in both groups using a Visual Analogue Scale at the beginning of active labour (4 cm cervical dilation) and at the end of the second active phase of labour (10 cm cervical dilatation). Duration of the active phases of labour, the type of delivery and the use of medication (oxytocin/promethazine/hyosin) in both groups were recorded.

Statistical Analysis

The SPSS version 13 was used to analyse the variables. Data in the two groups were compared using independent t- and chi-square tests.

Results

Both groups who participated in this clinical trial were similar in maternal age, occupation, education, nationality, location, abortion status and gestational age. The mean age of the women was 25, and most were housewives, illiterate, Iranian/urban women. The mean gestational age was 39 weeks, and none of the women had miscarriages (Table 1). According to a chi-square test, no significant difference in the severity of pain at the beginning of active labour (4 cm cervical dilatation) was observed between the two groups (p=0.447). However, there was a significant difference in the severity of pain between the two groups at the end of the second phase of labour (10 cm cervical dilatation) (p=0.001) (Table 2). Independent t-tests showed that the mean duration of active labour was 189.32 ± 90.85 min in the doula group and 251.13 ± 75.05 min in the control group (p=0.000), and this difference was significant. In contrast, no significance difference was noted between the groups in the duration of the second stage of labour and the type of delivery (97.3% NVD) in the doula group and 98.7% in the control group (Table 3). No significant difference was noted between the groups with regard to the use of drugs (oxytocin/promethazine/hyosin) (p = 0.975) (Table 4).

Discussion

It has been reported that when 'motivated women' prepare for childbirth, their labour pain is decreased by one-third. The presence of a companion can make the woman feel more confident. She is less anxious with her companion by her side, which results in a sedative effect that decreases labour pain [10]. Despite this, our study showed no significant difference between the two groups regarding pain severity at 4 cm cervical dilatation. The reason is probably because the patient's hospitalisation period in the beginning of active labour and the time required examining the effect on their companion's presence on labour pain and severity was not enough. In agreement with our study, Berghella et al. [11] showed that in the first phase of labour (especially at 3-6 cm cervical dilation) there is a direct relationship between epinephrine levels and the mother's anxiety and pain severity. At this time, the mother's pain and stress level is high because of the increase in epinephrine level, and the pain gradually decreases in severity with their companion's presence [11]. With pain severity at 10 cm dilatation at the peak of labour, the presence of a companion had a suitable effect on labour pain severity, and these results are consistent with Campbell's study. In Campbell's study, women who were supported emotionally during labour experienced a shorter labour duration and lesser pain at the end of active labour than the control group [7]. Martha's study, relevant to our study, showed that the presence of a support person during labour decreased pain/duration of labour, the number of caesarean births and the need for delivery with a device [8]. The duration of active labour in our study was shorter in the doula group than in the control group. Berghella et al. found that the presence of a supportive person such as the patient's mother, sister, or spouse decreased labour duration, [11] which is consistent with our results. Furthermore, Keshavarz et al. [12] showed

Variable		Doula group	Control group	Chi- square test
		Number	Number	p-value > 0.05
Maternal age	18-22	14	16	
	23-27	45	41	
	28-32	16	18	
Job	Housekeeper	32	31	
	Employee	3	4	
Education	Illiterate	53	55	
	Basic literacy	12	11	
	Guidance	5	4	
	High school	4	5	
	Academic	1	0	
Nationality	Iranian	70	73	
	Afghan	5	2	
Abortion	No	58	60	
	1	10	13	
	2	7	2	
G.A	38-40	70	73	
	41-42	5	2	

Table 1: Demographic data.

	Doula group (Number)	Control group (Number)	Chi- square test (P-Value)
Mild to moderate pain (at the beginning of active phase)	70	72	0.134
Sever pain (at the beginning of active phase)	5	3	0.359
Mild to moderate pain (at the ended of active phase)	39	14	0.001
Sever pain (at the ended of active phase)	36	61	0.001

Table 2: Comparison of the severity of pain at the beginning of active phase(dilatation of cervix 4 cm)and at the ended of active phase (dilatation of cervix 10 cm).

	Doula group		Control group		Independent t-test
	Mean	SD	Mean	SD	(P-Value)
Length of active phase	189.32	90.85	251.13	75.05	(0.000)
Length of the 2nd stage	42.50	146	44.39	144.02	(0.556)

Table 3: Comparison of the length of the active phase and the 2nd stage of labor (in minutes).

	Doula group (Number)	Control group (Number)	Chi- square test (P-Value)
Use of Oxytocin	18	19	**0.975**
Use of hyoscine	15	14	
Use of promethazine	4	3	
Lack of drug use	38	39	

Table 4: The use and lack of drug use in labor.

that the mean duration of the first and second phases of labour in their supported group was lower than their control group. Campbell et al. found that the duration of the first stage of active labour was far less in the supported group than the control group. In our study, unlike the first stage of active labour, there was no significant difference in the duration of the second phase of labour. Campbell et al. [7] reported that with the use of 'untrained companions', such as in our study, the second phase duration did not result in any significant differences [7]. Another study was conducted to analyze and compare different kinds of care providers in support of women during labour and the findings suggested that the overall duration of labour was far shorter when the support person was the woman's spouse rather than a friend or relative [5]. In addition, Keenan's study showed that women who are supported by a trained person or one of their relatives had a shorter labour course, and analgesic usage rates and caesarean rates were greatly decreased [13]. Perhaps a difference would have been observed if we had chosen a larger sample size or trained more companions or if the patient's spouse was the supporter. Perhaps the type of support person in other studies and our study caused the difference between the results. An investigation regarding delivery type shows that the majority of patients in supported groups (97.3%) and control groups (98.7%) had normal vaginal delivery, and no significant difference were observed between the two groups. A relevant study by Gordon et al. showed that the rate of caesarean section and delivery with a device did not differ significantly between their supported group and their control group [14]. Campbell et al. also showed that caesarean rates in both supported and control groups were not significantly different [7]. However, Kennell et al. studied 412 pregnant women and found that the rate of caesarean section in their supported group was 8% and in their control group was 13% [15]. Perhaps the results of Kennell's study differed from that of our study because of the difference in sample size.

In our study, the rate of administration of various routine drugs and oxytocin during labour was not significantly different between the two groups. Simkin et al. showed that the presence of a support person during labour decreased the need for analgesics and epidural anaesthesia [16], which is not consistent with our results. Conversely, Hodnett investigated the effect of a support person during labour and found a significant increase in the use of oxytocin in the supported group [17], which is also not consistent with our study. In our study the use of routine drugs was the same for both groups. Differences can be attributed to cultural variations because it is reported that a patient's culture type, fear and anxiety and lack of awareness of the physiology of labour can affect the severity of labour pain and consequently result in an increase in analgesic drug use [1]. In addition, the patient's support person was present from the beginning (early phases of labour) to the end of the second phase, which could have been another reason for a difference in the results. In confirmation of this, Hodnett observed that the presence of the support person during the early phases of labour has a more positive effect on the labour process compared with the presence of the support person during the later phases of labour [18].

Conclusion

Based on previous study results, doula support could be introduced as a novel practice to support women during delivery, considering its proven supportive role. Our study results suggest that a doula can act as an emotional support during delivery to decrease labour pain, fear and anxiety associated with normal vaginal deliveries in young mothers and possibly the number of caesarean sections.

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