Effects of Providing Hospital-Based Doulas in Health Maintenance Organization Hospitals

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***Objective*: To evaluate whether providing doulas during hospital-based labor affects mode of delivery, epidural use, breast-feeding, and postpartum perceptions of the birth, self-esteem, and depression.**

***Methods*: This was a randomized study of nullipara enrollees in a group-model health maintenance organization who delivered in one of three health maintenance organization–managed hospitals; 149 had doulas, and 165 had usual care. Study data were obtained from the mothers' medical charts, study intake forms, and phone interviews conducted 4–6 weeks postpartum.**

***Results*: Women who had doulas had significantly less epidural use (54.4% versus 66.1%, $P < .05$) than women in the usual-care group. They also were significantly ($P < .05$) more likely to rate the birth experience as good (82.5% versus 67.4%), to feel they coped very well with labor (46.8% versus 28.3%), and to feel labor had a very positive effect on their feelings as women (58.0% versus 43.7%) and perception of their bodies' strength and performance (58.0% versus 41.0%). The two groups did not differ significantly in rates of cesarean, vaginal, forceps, or vacuum delivery, oxytocin administration; or breast-feeding, nor did they differ on the postpartum depression or self-esteem measures.**

***Conclusion*: For this population and setting, labor support from doulas had a desirable effect on epidural use and women's perceptions of birth, but did not alter need for operative deliveries. (Obstet Gynecol 1999;93:422–6. © 1999 by The American College of Obstetricians and Gynecologists.)**

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Doulas are experienced lay women who provide continuous emotional support to women in labor, including praise, reassurance, measures to improve comfort, physical contact, explanations of what is happening at different points in labor, and companionship.[1] A meta-analysis of four randomized clinical trials on the effects of continuous labor support from a doula for young (average age 20), low-income, nulliparous women found statistically significant decreases in odds of having cesarean or forceps deliveries, oxytocin, epidural anesthesia, analgesics, and long labor.[1] One of those studies examined psychosocial outcomes and found that women with doulas reported better coping and lower perceptions of pain during labor, quicker bonding with the baby, and decreased anxiety and depression at 6 weeks postpartum.[2]

Whether the results of those studies are generalizable to current labor and delivery environments in the United States and to populations of privately insured, middle class women giving birth in private hospitals, is not clear. For example, a randomized study in Canada with nulliparous, middle class, married women who gave birth in private hospitals with their husbands or other labor partners present throughout labor found no effect of doula care on mode of delivery or duration of labor, although women who had doulas were significantly less likely to request epidural anesthesia or analgesia.[3] Current practices applied to women in most private hospitals in the United States include accelerated dosing of oxytocin during the first stage of labor, greater use of epidural anesthesia, and a norm for women to have their spouses or other companions with them throughout their hospital-based labor. Privately insured women are generally better educated and more likely to have had some formal childbirth preparation and to be more aware of childbirth options than the young, disadvantaged women in those earlier studies, which might mitigate the effects of doulas as supportive guides through birth.

The present study was designed to examine whether participation of doulas in hospital-based births would make a difference in the labor and delivery process and perceptions of the birth process for a group of nulliparous women enrolled in a prepaid group-model health maintenance organization. Similar to the Canadian study, these women were all delivering in private hospitals owned by the health maintenance organization, most were expected to have received some formal instruction in childbirth preparation, and most were expected to have a spouse or other person with them during their hospital-based labor.

Methods

Between January 1994 and December 1996, nulliparous women with uncomplicated pregnancies who were receiving prenatal care at one of three medical centers of a large Northern California health maintenance organization were invited to participate in a randomized study of doula-assisted labor and delivery within the health maintenance organization's hospital setting. Consent to participate was obtained during prenatal enrollment. Assignment was made at the time of admission to the labor and delivery unit. To be eligible for randomization, women had to be expecting an uncomplicated vaginal delivery and be in spontaneous labor with the cervix less than 5 cm dilated on admission to the labor and delivery unit. Randomization was done within 30 minutes of admission, by drawing a sealed envelope that contained an assignment card to the doula or the usual care group. When a woman was randomized to doula intervention, a labor and delivery nurse phoned an on-call doula and asked her to report to the hospital to attend to the laboring patient. Women assigned to usual care received no special treatment.

Although the experience of the doulas varied within study sites, before participating in this study, all doulas had attended approved doula training programs in the community, served as doulas for at least two births under the supervision of a more experienced doula, and had attended a half-day orientation to the health maintenance organization's labor and delivery environment and the research protocol. After each birth, an attending doctor and nurse filled out a written evaluation of the doula, and any problems they identified with the doula were followed up by the project manager. Most (91%) of the study women who had doulas gave them ratings of excellent or very good in the follow-up interviews. Each day, including weekends, one on-call and at least one back-up doula were scheduled to be available to the study. Doulas were paid a $75 stipend for each labor they assisted.

Between May 1994 and December 1996, 478 women were randomized, 232 to the doula group and 246 to the usual-care group. Sixty-nine women assigned to the usual-care group and 73 assigned to the doula group were excluded after assignment, for reasons including failure to meet dilation criteria (57 usual care and 37 doula), no on-call doula available during labor (22 doula), and age younger than 18 years (12 usual care and 14 doula). Whereas young teens were included initially, we realized later that they usually received more attention from hospital staff during labor. As a group, they also were substantively different from other women in attendance of childbirth preparation programs, expectations about epidural use, procedures used during labor and delivery, postpartum breast-feeding, and life experience they brought to their evaluations of the birth experience and how it affected them.

Evaluation of the effects of doula-assisted labor in a health maintenance organization hospital setting was based on 314 study subjects 18 years of age and older, 149 who had doulas and 165 who received usual care. Of these, 143 (96%) doula and 145 (88%) usual-care women completed structured telephone interviews at 4–6 weeks postpartum, in which they gave information about the birth experience, the presence of others during labor, breast-feeding and psychosocial measures of self-esteem (single item from the Rosenberg Self-Esteem scale) and depression (assessed by a single item and score on the five-item Mental Health Index from the Short Form-36)[4] (interview instrument available from lead author on request). All interviews were conducted by a single interviewer who was unaware of the women's study group assignments until the last few questions of the interview. Nearly all of the missed interviews were due to language barrier (non-English speaker) or temporary delay in forwarding names of randomized women to the study coordinating center by one study site, resulting in women being outside the window for the follow-up interviews. There was one interview refusal. Objective data on labor and delivery events for all women in the study were obtained from the women's medical charts.

Because we suspected cesarean and epidural rates would vary across the three study sites, these outcomes were compared for the two study groups overall and within each site. Chi-square test and Fisher exact test were used to determine whether differences between the two study groups were statistically significant at $P < .05$.

Results

Table 1 provides a description of the women in the doula and usual-care groups. Slightly more than half of the women were white and college graduates; their

mean age was 29 years. More than 80% reported attending childbirth preparation programs, most indicated during prenatal care that they planned to breast-feed, and all had at least one individual with them during labor. The two study groups were well matched in age, race, education, childbirth preparation, breast-feeding plans, dilation at admission to labor and delivery unit, and types of support persons they brought with them to the hospital. The doula group had a higher percentage who said in the follow-up interview that they had planned to ask for epidurals before entering the hospital, but the difference was not statistically significant.

Overall, there were no statistically significant differences between groups in rates of cesarean delivery, uncomplicated vaginal delivery, use of oxytocin, or use of analgesics (Table 2). However, the women who had doulas were significantly less likely than those who received usual care to have epidural anesthesia. Having a doula had a larger effect on epidural use among those women who had not planned to ask for an epidural before beginning labor (46 of 92, or 50%, in the doula group versus 69 of 101, or 68.3%, in the usual-care group, $P = .01$) than among those who had planned to ask for one (21 of 29, or 72.4%, in the doula group versus 18 of 22, or 81.8%, in the usual-care group, $P = .43$).

As expected, use of procedures and pain medication varied by study site, although in most cases, the differences between groups were consistent with the overall results. We found that having a doula significantly ($P < .05$) reduced epidural use in only two of the three study sites (for the doula versus usual-care groups, respectively, 31 of 70, or 44.3%, versus 53 of 80, or 66.2%, in site 1, and 19 of 37, or 51.3%, versus 31 of 42, or 73.8%, in site 2). In site 3, epidural use was higher among women in the doula group, although the difference was not statistically significant, due to small sample sizes (31 of 42, or 73.8%, of the doula group versus 25 of 43, or

Table 1. Comparison of Doula and Usual-Care Groups

	Doula (%) (n = 149)	Usual care (%) (n = 165)
Age at delivery (y)*		
18–34	79.9	79.4
≥35	22.1	20.6
Race-ethnicity*		
White	56.7	54.0
Black	19.1	20.0
Hispanic	13.5	14.7
Asian	7.1	10.0
Other	3.6	1.3
Education†		
<12 y	6.7	4.9
High school graduate	10.7	12.8
Some college or technical school	28.9	32.9
College graduate	53.7	49.4
Attended childbirth preparation class‡	86.7	89.0
Planned to have epidural before beginning labor‡	20.4	15.2
Dilation at hospital admission (cm)*		
1–2	32.2	29.1
3	38.9	38.2
4	28.9	32.7
Companion present during labor‡		
Spouse/partner	83.2	78.2
Mother	49.7	45.4
Any female	60.4	51.5
Any male	84.6	80.6
Planned to breast-feed before giving birth†	89.2	90.8
Delivery site*		
Study site 1	47.0	48.5
Study site 2	24.8	25.4
Study site 3	28.2	26.1

* Ascertained from medical chart.
† Ascertained from intake questionnaire completed by all women.
‡ Ascertained from follow-up interview; doula group n = 143, usual care n = 145.

Table 2. Procedures Used During Labor, Perceptions of the Birth Experience, and Breast-Feeding

	Doula (%) (n = 149)	Usual care (%) (n = 165)	P
Procedures and pain medications*			
Cesarean	16.8	15.8	
Vaginal delivery with forceps or vacuum extraction	19.2	28.8	
Uncomplicated vaginal delivery	67.8	60.0	
Epidural anesthesia	54.4	66.1	.047
Analgesia during first stage of labor	61.1	68.5	
Oxytocin during first stage of labor	61.7	62.4	
Evaluation of birth experience*			
Felt birth experience was:			
Fairly or very easy	15.4	18.6	
Fairly or very difficult	63.6	62.1	
Felt labor was better than expected	29.4	22.9	
Felt coped very well with labor	46.8	28.3	.003
Felt the birth experience was good	82.5	67.4	.005
Felt labor had a very positive effect on†:			
Feelings as a woman	58.0	43.7	.021
Feelings of self-worth	54.5	45.1	
Feelings about body's physical strength and performance	58.0	41.0	.006
Feelings about ability to be a good mother	49.6	46.5	
Breast-fed baby†			
Breast-fed at all after birth	95.3	95.3	
Still breast-feeding at 4 weeks postpartum‡	90.1	87.4	

* Percentages based on women with chart data; n = 149, doula, and n = 165, usual care.
† Percentages based on responses from women who completed the follow-up interview; n = 143, doula, and n = 145, usual care.
‡ Percentages based on women who started breast-feeding.

58.1%, of the usual-care group, $P = .064$). Site-specific analyses of epidural rates by decision to request an epidural before beginning labor resulted in very small subsamples. However, the data suggest that the overall higher epidural rate for the doula group at site 3 was due to no doula effect among women who had not entered labor wanting an epidural and all women who had made a prior decision to have an epidural receiving one.

There were no significant differences between doula and usual-care groups in the proportion of women who chose to breast-feed their infants shortly after birth and among women who chose to breast-feed, in the proportion who were still breast feeding at 4 weeks postpartum. Those results were consistent across study sites.

Women in the doula group were significantly more likely than those in the usual-care group to report that they felt they had a good birth experience and had coped very well with labor. Women in the doula group were significantly more like to report that the birthing experience had a very positive effect on their feelings as women and on their perceptions of their bodies' physical strength and performance. There were no statistically significant differences between the doula and usual-care groups regarding women's descriptions of their labors (easy versus difficult), how they rated their labor compared with what they had expected, or their perceptions of how the birthing experience affected their self-worth and feelings about whether they would be good mothers. The women receiving doulas did not differ from those who received usual care on postpartum measures of overall mental health (mean scores on the five-item Mental Health Index from the Short Form-36) or overall self-esteem.

Nearly all (96%) of the women in the doula group felt that the doula was helpful making their labor more like they wanted it to be, with 73% reporting that the doula was very helpful. Half of the women felt that the doula was more helpful than their other labor companion(s), including spouses. Nearly all (96%) of the women who had doulas and two-thirds (66%) of those in the usual-care group were interested in having a doula for their next childbirth, with women in the doula group nearly three times more likely than those in the usual-care group to say they would definitely like having a doula (77% and 27%, respectively).

Discussion

We found that continuous contact with doulas after admission to a labor and delivery units decreased epidural use significantly, but only in two of three study sites. Having doulas did not result in statistically significant decreases in rates of cesarean or operative vaginal deliveries, oxytocin use, or analgesic use. The lack of differences in rates of medical intervention observed in this study compared with the results of the meta-analyses conducted by Zhang et al[1] has several possible explanations. First, our study population was of a higher income racket, more educated, older, and probably better prepared in terms of prenatal childbirth education than the populations in the four randomized trials that found significant doula effects. Similar to the Canadian study, all of the women in our study had brought one person to be with them in the hospital room during labor, and most had more than one support person, whereas the women in the meta-analyzed studies had not been allowed to have anyone (except the doula) accompany them. We assume that in most cases, the spouse-partner (present during labor for 80% of the women) was exposed to the same childbirth preparation education that the woman received. Additionally, more than half of the women had an untrained, but not necessarily inexperienced, female labor companion. Klaus hypothesized that the continuous presence of a woman labor companion, even if she is not trained specifically to provide labor support, might have a beneficial effect similar to that from having a trained doula (personal communication).

The lack of difference in cesarean rates and the barely significant difference in epidural rates found by this study might also be a function of experience of the doulas and of when they began to interact with the laboring women. In the previous studies, the doulas were hospital-based and began working with patients immediately after admission. In this study, doulas were called to the hospital when needed. By the time doulas arrived to work with patients, the patient might already have decided to have an epidural, or labor might have progressed beyond the point of benefit of having a doula. This idea is supported by the fact that in two of the three study sites, among women who did not plan to have epidurals, those given doula support were significantly less likely to have epidurals compared with those who did not. We cannot explain why this effect was not found in the third study site. Guaranteeing to provide women with doulas during the prenatal period and having the doulas begin to work with the women soon after, or even before hospital admission, might cut costs and medical consequences associated with epidurals.[5–7] The lack of difference in breast-feeding is likely due to the fact that during the study, all three medical centers had breast-feeding education and support services in the hospital for outpatients.

The size of our study groups limited the power of our statistical tests. For example, the difference in uncomplicated vaginal delivery rates would have been statis-

tically significant had the study groups been four times as large.

In general, women who had doulas were very enthusiastic about them, and even women who did not have doulas thought they would like to have one if they had another baby. The women appreciated the knowledge doulas had of labor, the support and reassurance doulas provided, and because there was an extra person to relieve the spouse-partner, they were never alone.

As hospitals increase the ratio of patients to labor and delivery nurses, consequently, they decrease the amount of direct contact and support of women in labor by those nurses. Over the years, technology has replaced the human aspect of patient care without any improvement of outcomes, and it might be appropriate to reassess the effect of experienced women labor companions on labor and delivery.

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