

Childbirth Preparation and Outcomes of Labor and Delivery in Primiparous Women

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Preparation for childbirth (Lamaze classes) is becoming an increasingly popular addition to patient education. This retrospective study investigates its effect on 64 primiparas in comparison with a control group who had not taken classes. The two groups were matched for age, antenatal risk scores, ethnic derivation, and socioeconomic status. No difference was found in the use of analgesia and anesthesia, the length of labor, type of delivery, incidence of fetal distress, infant birth weights, Apgar scores, or maternal and neonatal complications. However, there was a statistically significant increase in the use of oxytocin for augmentation of labor ($P < 0.01$) in the prepared group.

Lamaze classes in preparation for childbirth provide information about pregnancy, labor, and delivery as well as instruction to the prospective parents in methods of relaxation and structured breathing. The goals are to lessen fear and to provide alternatives to medication in dealing with the discomfort of uterine contractions. Although much has been written on this subject in the last 30 years, objective advantages and disadvantages of this training have not been consistently demonstrated. Reported here is an observational case-control study that looked for differences in labor characteristics and outcomes in a group of primiparas who took childbirth preparation classes as compared with a matched group who received no preparation.

Methods

From a study population of primiparous women who delivered at the University Hospital, Seattle, Washington, in 1980 and 1981, data were obtained from a master computer file of perinatal statistics to identify 64 primiparas who attended prenatal preparation classes. Their ages ranged from 20 to 35 years. All had established their first prenatal clinic visit prior to 20 weeks' gestation and had delivered at term (beyond 36 weeks' gestation). They had each identified spousal relationships as stable, either as living together or married. Attendance at prenatal classes was determined by the labor admission record, which included an item labeled "Prepared childbirth classes . . . yes/no." The accuracy of this information was verified by postpartum interviews.

This prepared group was compared with 64 primiparas who met the above criteria, excluding classes. They were matched for age (\pm five years), antenatal risk score (compiled from an initial history and physical examination risk index), ethnic

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Table 1. Labor and Delivery Characteristics

	Classes min ± SD	No Classes min ± SD
Labor		
Mean length of 1st stage	1,128 ± 647	974 ± 882
Mean length of 2nd stage	137 ± 114	126 ± 120
	No. (%)	No. (%)
Type of Delivery		
Spontaneous cephalic	33 (51.6)	35 (54.7)
Low forceps	22 (34.4)	18 (28.1)
Cesarean section	9 (14.1)	10 (15.7)
Patients with		
Oxytocin augmentation	34 (54.8)	16 (25.4)
Oxytocin induction	4 (6.3)	3 (4.7)

Table 2. Number of Patients Choosing Analgesia and Anesthesia

	Classes	No Classes
Analgesia	8	13
Anesthesia		
Local	13	12
Pudendal	7	6
Epidural	36	39
Caudal	13	15
Spinal	1	3
General	1	3
None	9	4

group (white and Hispanic, black, native American, other), and socioeconomic status (obtained from the initial history and physical examination risk index). The factors investigated were length of labor, use of analgesia and anesthesia, type of delivery, intrapartum complications, infant Apgar scores, and maternal and infant morbidity. Differences were determined by application of the *t* test and chi-square statistics.

Results

Table 1 displays labor and delivery characteristics. The prepared group had somewhat longer labors, but the difference was not statistically signif-

icant. Of note is the statistically significant higher frequency of oxytocin augmentation in the prepared group (54.8 percent vs 25.4 percent). Types of presentation and delivery were comparable in both groups. There were no significant differences in the use of analgesia or anesthesia, although fewer of the prepared group chose analgesia and a higher percentage of this group chose no anesthesia (Table 2). There were no significant statistical differences in antepartum, intrapartum, or postpartum maternal complications (Table 3). Specifically, there were no more dysfunctional labors in the prepared group than in the control group, although prolonged rupture of membranes was present in twice as many women in the prepared group. Birth weights and Apgar scores were comparable (Table 4). Although there were no epi-

Table 3. Maternal Complications in 128 Primiparous Women

	Classes No.	No Classes No.
Antepartum		
Excessive weight gain	0	4
Emotional stress	0	1
Postterm pregnancy	5	3
Pregnancy-induced hypertension	6	7
Abnormal nonstress test	0	1
Low or falling estriol levels	1	0
Vaginal bleeding	1	1
Active herpes	0	1
Intrapartum		
Maternal fever > 38°C	2	1
Prolonged rupture of membranes	7	3
Precipitate labor	1	2
Previous cesarean section allowed to labor	1	0
Prolonged latent phase	3	3
Protracted active phase	4	1
Secondary arrest of cervical dilation	1	2
Prolonged second stage of labor	17	18
Postpartum		
Cervical laceration	0	1
Amnionitis	1	1
Endometritis	1	2
Episiotomy infection	1	0
Preeclampsia	1	1
Spinal headache	0	1
Anemia	0	1
Fever of undetermined origin	0	1
Urinary tract infection	2	1

sodes of fetal distress as defined by scalp or cord pH of less than 7.20 in either group, there were more instances of fetal heart rate abnormalities in the prepared group. Infant morbidity was also similar in the two groups.

Discussion

Antenatal instruction based on the precepts of Dick-Read and Lamaze^{1,2} have become increasingly available in the United States. In some communities, participation in such classes has been estimated at 50 percent of pregnancies.³

Earlier evaluations of the effects of such

instruction on the process of childbirth did not include appropriate control groups, statistical analyses, or consideration of changing practices in obstetrics with respect to the use of fetal monitors and analgesia,⁴⁻⁷ while other studies have even included multiparas.^{9,10}

The present study of primiparous women includes a control group with matched study variables. Stringent inclusion criteria, in particular a limited age range and a married or cohabitational status, have somewhat limited the size of the prepared group. In agreement with previous studies,⁸⁻¹¹ there were no statistical differences in the length of labor, incidence of fetal distress, birth weights, Apgar scores, and maternal or neonatal complications. The decreased use of analgesia ob-

Table 4. Infant Outcomes in 128 Deliveries

	Classes	No Classes
Fetal distress		
Meconium staining	16	16
Abnormalities of fetal heart rate*	23	15
Mean birth weight (grams ± SD)	3,503 ± 435	3,395 ± 470
Mean 1-minute Apgar score (±SD)	7.78 ± 1.5	7.68 ± 1.4
Mean 5-minute Apgar score (±SD)	8.81 ± 1.2	8.86 ± 0.5
Postpartum complications		
Transient tachypnea	0	2
Hyperbilirubinemia	3	1
Congenital anomaly	0	1
Septic workup	1	0
Seizures	1	0
Neonatal intensive care unit admissions	4	3

* Late or variable deceleration patterns on electronic monitor or prolonged depression of the fetal heart rate below 100 beats/min

served by others⁸⁻¹⁰ was not statistically shown in this study, nor was there use of a different type of anesthesia, such as a pudendal block or local infiltration, instead of conduction anesthesia.^{8,10,11}

The increased use of oxytocin for augmentation of labor in the prepared group, together with a longer first stage of labor (without diagnosed dysfunctional labor), raises the question of an earlier awareness of the onset of labor with a longer perceived first stage and a prolonged latent phase or an association with the more frequent prolonged rupture of membranes. Although not statistically significant, the increased incidence of abnormal fetal heart rates (23/64 in the experimental group vs 15/64 in the control group) also raises the possibility of its association with the use of oxytocin for augmentation of labor.

To date, studies of the effects of childbirth preparation have shown various differences, but more impressive is the finding of a lack of consistent effects. While psychosocial advantages such as a lessening of anxiety, the establishment of a support system, and a mutual parental bonding with the newborn may well exist for some individuals, at the present time it would seem inappropriate to claim consistent and predictable objective medical advantages from such an experience.

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