

Obstetrical Care in a Prepaid Cooperative: A Comparison Between Family Practice Residents, Family Physicians, and Obstetricians

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The purpose of this study was to compare the obstetrical care provided by three different groups of physicians. Deliveries between July 1975 and July 1977 were tabulated and all 211 deliveries of the family physician (FP) group, and all 199 of the family practice residency (FPR) group were reviewed, as were a randomly selected group of 193 obstetrician (OB) deliveries. All hospital charts were reviewed for 81 variables. The FPR group had more patients who were poor, single, and nulliparous. They presented later in pregnancy, were more often anemic, and had an increased incidence of venereal disease. The FPR and FP groups documented major psychological problems and depression more frequently. The obstetricians used caudal and epidural anesthesia more frequently, whereas the FP and FPR groups used more narcotics. Except for an increased incidence of third degree lacerations in the FP group, total maternal and fetal complications were few and similarly divided among the groups. The FPR and FP groups delivered 78 percent and the OB group 38 percent of their own patients. This paper is an addition to a limited literature base which deals with process and outcome of obstetrical care delivered by various provider groups and is unique in that the study was undertaken in a large prepaid group.

Family physicians and general practitioners provide a large portion of this country's obstetrical care, especially in the rural community. In addition, the practice of obstetrics is of prime impor-

tance because it allows the establishment of a relationship between a family and a physician that cannot be duplicated in any other way. This leads to the development of a panel of patients that includes more families and children and consequently problems in family growth, psychosocial problems, orthopedics, minor surgery, and gynecology. This change contributes significantly to improved physician satisfaction¹ and patient satisfaction.

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The American Academy of Family Physicians and the American College of Obstetrics and Gynecology have jointly studied obstetrics as practiced in this country and have recognized the necessity of family physicians providing a large portion of this nation's obstetrical care.² A joint committee has developed guidelines to be used for the training of these physicians. In addition, they have agreed that hospital privileges for the physicians providing this care should be based on documented training and proven competence rather than arbitrary criteria developed in various localities. However, the practice of obstetrics and the granting of hospital privileges to family physicians continues to be controversial. Unfortunately, there is a paucity of objective data on which to base discussion.

Setting

Group Health Cooperative of Puget Sound is a prepaid, consumer owned health care program located in the Seattle metropolitan area. At the time of the study, the patient population was approximately 200,000 persons served by 200 physicians. Ninety physicians were family or general practitioners (11 of whom practice obstetrics), and 20 were obstetricians. The family practice residency consists of 12 family practice residents who provide comprehensive and family oriented care to approximately 4,000 patients. There are three groups of physicians who provide obstetrical services: the family practice residents (FPR), family physicians (FP), and obstetricians (OB). Ninety percent of deliveries were performed by the OB group.

Methods

All deliveries between July 1, 1975, and July 30, 1977, were tabulated. Hospital and prenatal records of all the family practice resident (199) and family physician (211) deliveries were reviewed, as were (193) obstetrician records. This sample was selected from a group of 4,990 patients using a table of random numbers. Each record was analyzed for 81 variables including demographic in-

formation, past obstetrical and clinical history, events during the prenatal course, labor, delivery, and the postpartum course. Included in the study were 16 family practice residents at all levels of training, 11 family physicians, and 20 obstetricians. None of the family physicians were certified or board eligible by the American Board of Family Practice. Twenty-five percent of both family physicians and obstetricians had been in practice longer than ten years; 45 percent of the family physicians were in practice less than five years, as were 40 percent of the obstetricians. There were two female physicians in the family physician group, one in the obstetrician group, and seven in the residency group. Results were compared and chi-square and t tests applied. In all tables the P value refers to comparisons of all provider groups taken together; the individual provider groups are not compared separately to each other.

Results

Presentation and Prenatal Course

Demographic information is summarized in Table 1. The mean age for all patients was 27 years, with no significant differences between groups. The FPR patients were more often on public assistance, single, and primiparous. They tended to present later in pregnancy, were more often anemic, and had an increased incidence of venereal disease. The FPR and FP patients were significantly shorter than the obstetrician patients with 34 patients (17 percent) in each group being less than 60 inches tall. Only nine OB patients (4 percent) were of similar short stature. Pre-pregnancy weight and weight gain during pregnancy were similar for all groups (Table 2). Past obstetrical and medical history findings on physical examination and initial laboratory studies were otherwise similar for all groups.

Patients were similar in gestational age at the time of delivery and had a similar number of prenatal visits, averaging ten. There were no differences in the incidence of increased blood pressure, proteinuria, and preeclampsia. There were no significant differences in the number of patients receiving ultrasound, pelvimetry, amniocentesis,

Table 1. Demographic Data
Number (Percent)

	Family Practice Residency Group	Family Physician Group	Obstetrician Group	P Value
Age	25.8 ± 5.7	26.4 ± 5.0	27.3 ± 4.8	0.56
Medical Coverage				
Public Assistance	34 (17.1)	26 (12.3)	18 (9.3)	
Individual Cooperative member*	38 (19.1)	55 (26.1)	55 (28.5)	
Group member**	127 (63.8)	130 (61.6)	120 (62.2)	0.07
Marital Status				
Single	45 (22.6)	30 (14.2)	14 (7.3)	
Married	148 (74.4)	173 (82.0)	172 (89.6)	
Other	6 (3.0)	8 (3.8)	6 (3.1)	0.001
Parity				
Primiparous	109 (54.8)	96 (45.5)	75 (38.9)	
Multiparous	90 (45.2)	115 (54.5)	118 (61.1)	0.013

*Patients' medical coverage by the individual joining Group Health Cooperative
**Patients' medical coverage by employer's health plan

Table 2. Characteristics at Initial Prenatal Visit
Number (Percent)

	Family Practice Residency Group	Family Physician Group	Obstetrician Group	P Value
Weeks of Gestation (Number)	15.9 ± 12.9	12.8 ± 8.5	13.4 ± 6.3	
<13 weeks	119 (59.8)	155 (73.5)	144 (74.6)	
>13 weeks	80 (40.2)	56 (26.5)	49 (25.4)	0.002
Weight (lbs)				
Pre-pregnancy weight	130.1 ± 25.4	132.9 ± 24.4	134.5 ± 26.1	0.56
Weight gain during pregnancy	28.2 ± 12.4	29.0 ± 10.8	29.6 ± 11.6	0.50
Height				
Less than 60 inches	34 (17.1)	34 (16.1)	9 (4.7)	
Greater than 60 inches	165 (82.9)	177 (83.9)	184 (95.3)	0.0002
Hematocrit Level				
<35%	79 (39.7)	52 (24.6)	47 (24.4)	
>35%	120 (60.3)	159 (75.4)	146 (75.6)	.001

and oxytocin challenge test. More FP patients had a notation of abnormal blood glucose, glycosuria, or abnormal glucose tolerance test. Family prac-

tice residents and family physicians documented more major social and mental health problems than did the obstetricians (P=.02).

Table 3. Pitocin Augmentation and Rupture of Membranes Number (Percent)				
	Family Practice Residency Group	Family Physician Group	Obstetrician Group	P Value
Pitocin Augmentation	88 (46.8)	99 (51.0)	56 (26.2)	0.000
Membranes Ruptured >23 hours	66 (33)	49 (23)	56 (29)	0.05

Table 4. Length of Labor				
	Family Practice Residency Group	Family Physician Group	Obstetrician Group	P Value
Stage I				
	Hours			
Primiparas	8.1 ± 9.2	7.2 ± 5.5	6.7 ± 5.5	0.89
Para=1	5.3 ± 4.4	6.0 ± 4.3	6.5 ± 6.7	0.28
Para>1	6.6 ± 6.1	5.6 ± 3.3	4.7 ± 3.7	0.20
Total All Patients	7.1 ± 7.7	6.5 ± 4.7	6.2 ± 5.7	0.29
Stage II				
	Minutes			
Primiparas	85.5 ± 110.6	67.2 ± 41.8	75.0 ± 49.1	0.44
Para=1	32.8 ± 56.7	38.2 ± 98.3	48.6 ± 89.4	0.63
Para>1	38.1 ± 47.4	19.8 ± 21.6	21.1 ± 24.4	0.02
Total All Patients	62.7 ± 92.5	47.1 ± 65.4	53.0 ± 68.1	0.25
Stage III				
0-20 minutes (88%)	172 (86.4)	192 (91)	167 (86.5)	
>20 minutes (12%)	27 (13.6)	19 (9)	26 (13.5)	0.26
Stage II Percentages				
Para>1 with length>1 hour	(23.7)	(4.1)	(9.8)	0.02

Labor and Delivery

Patients presented to labor at approximately the same gestational age. There were no differences in the incidence of anemia noted at the time of labor; labor was spontaneous in 90 percent of patients and induced in 10 percent, with no differences between groups. Unfortunately, the data did not distinguish between elective inductions and indicated inductions. The FP and FPR groups used oxytocin (Pitocin) significantly more frequently than the OB group (Table 3). It is interesting, however, to note that even with the use of Pitocin, FPR multiparous patients had a longer stage II (Table 4). Ninety-five percent of infants presented as vertex; the

method of delivery is summarized in Table 5. The incidence of fetal distress (nine percent) and preeclampsia (three percent) was not significantly different between groups. Data regarding anesthesia is presented in Table 6. The FPR and FP groups used narcotics (generally Nisentil [alphaprodine]) twice as often as obstetricians. However, caudal epidural anesthesia was used twice as frequently with OB patients as with FPR and FP patients. Fifty percent of family practice residency patients vs 75 percent of family physician patients and 70 percent of OB patients were coached. Absence of a coach correlated directly with being single, poor, and young.

	Family Practice Residency Group	Family Physician Group	Obstetrician Group	P Value
Spontaneous Vaginal	149 (72.0)	164 (77.4)	139 (71.3)	
Vacuum Extraction	17 (8.2)	17 (8.0)	11 (5.6)	
Low Forceps	13 (6.3)	17 (8.0)	17 (8.7)	
Other	1 (0.5)	2 (0.9)	4 (2.0)	
Cesarean Section				
Primary	23 (11.1)	12 (5.7)	17 (8.7)	
Secondary	4 (1.9)	0 (0)	7 (3.6)	
Total	27 (13.0)	12 (5.7)	24 (12.3)	
Totals	207	212	195	0.65

	Family Practice Residency Group	Family Physician Group	Obstetrician Group	P Value
None	10 (5.0)	12 (5.7)	4 (2.1)	0.160
Narcotic	59 (29.6)	65 (30.8)	33 (17.1)	0.003
Sedative	14 (7.0)	7 (3.3)	6 (3.1)	0.103
Local	56 (28.1)	74 (35.1)	55 (28.5)	0.229
Paracervical	13 (6.5)	14 (6.6)	5 (2.6)	0.124
Pudendal	90 (45.2)	85 (40.3)	72 (37.3)	0.272
Caudal/Epidural	24 (12.1)	28 (13.3)	50 (25.9)	0.000
Spinal	19 (9.5)	20 (9.5)	25 (13.0)	0.441
*Note: Any one patient may have received one or more types of analgesia/anesthesia				

Maternal and Fetal Outcome

For the most part, mothers fared equally well. No episiotomy was done in 20 percent of cases, with no differences between the groups. The incidence of fourth degree lacerations was similar, seven percent. Third degree lacerations were increased in the FP group (13 percent) compared to FPR group (5 percent) and the OB group (3 percent) ($P=.001$). This is discussed further below. The following problems were also noted, with no differences noted between groups: manual removal of the placenta, 12 percent; postpartum fever, 5 percent; abnormal bleeding, 2 percent; endometritis, 2 percent; and thrombophlebitis 0.2 percent. Length of hospital stay was 4.4 ± 9.6 days with the day of delivery being included.

There were no differences between groups regarding fetal outcomes. A total of 1.5 percent of fetuses were stillborn or died within 24 hours. Infant Apgar scores at one minute were slightly lower for FPR patients, but comparable at five minutes, with 2.4 percent requiring intubation and 11 percent given oxygen by bag or mask. Birth weights were similar with 10 percent being less than 2,400 gm and 3.5 percent being greater than 4,500 gm.

The FPR group had fewer patients breast feeding (66 percent) than the FP (75 percent) and the OB (74 percent) groups. Seven family practice residency infants were adopted out vs three for family physicians and two for obstetricians. There were 37 Rh positive infants born to Rh negative

mothers, with RhoGAM being given in all indicated situations. There were no cases of Rh isoimmune disease.

Continuity of Care

Mothers transferred care during their prenatal course in 1.7 percent of cases, with no differences between groups. The family physicians and family practice residency physicians delivered 78 percent of their prenatal patients and the obstetricians, 38 percent.

Discussion

This study adds to the fund of knowledge regarding the care of obstetrical patients and the ways in which the various providers differ. Patients cared for by the FPR and FP groups were at higher risk in several social and demographic variables; presented later in pregnancy with an increased incidence of venereal diseases and anemia; were shorter with the same body weight, and had an increased notation of psychosocial problems. The labor and delivery were different in that there was a significant increased use of Pitocin by the FP and FPR groups. A possible explanation for this is that a relative cephalopelvic disproportion is increased in patients with short stature, as was seen with patients in the FP and FPR groups. In addition it appears that the FP group used Pitocin earlier than the other groups and had the least number of patients with labor longer than 24 hours, a well-known risk factor. Overall length of labor was not significantly shorter for augmented patients, and one could postulate that if Pitocin were not used, the labors would have been longer yet. Labor itself was not markedly different except that the family practice residency group's poorer, single patients were less often coached, and that caudal/epidural anesthesia was used more frequently by the obstetrician group but did not correlate with the patient's socioeconomic status, parity, or absence of a coach.

Maternal outcomes were comparable except in the increased incidence of third degree lacerations in the FP group. These lacerations were not correlated with the use of Pitocin, length of Stage I, weight gain, or socioeconomic status. There was a significant correlation of third degree and fourth degree lacerations with an increased length of Stage II in the FP and OB groups, but not the FPR

group (P values are .004, .007, and 0.13, respectively). The patients of FP and FPR groups were of similar weight, but of shorter stature than the OB patients, and had babies of similar birth weight. In addition, the family physicians with the longest experience had the lowest percentage of third and fourth degree lacerations. Perhaps their experience and matured delivery techniques relate best to the occurrence of lacerations. Fetal outcome was comparable.

This study obviously has the inherent weakness of a retrospective study, does not address itself to more subtle areas of interaction such as patient selection of physician, physician consultation processes, and resident to attending/teacher processes, and does not deal with patient satisfaction. The group sizes are adequate for most variables studied, but are too small when comparing relatively infrequent events, ie, a death.

Conclusion

The documentation of process and outcome of obstetrical care in this audit and in the audits by Phillips³ and Ely⁴ show that family physicians and family practice residents and obstetricians provide a comparable high quality of care. There were areas of divergence that will require further study, and more sensitive indicators of process/outcome need development. In addition, physicians who practice obstetrics in the general community, not in tertiary care facilities or training hospitals, need to study their practices and contribute their findings to the literature.

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