



Neonatal Outcomes of 26,331 Infants Delivered by Obstetrics Fellowship Trained Family Physicians and OB/Gyns

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Abstract

Background: Neonatal outcomes of infants delivered by family physicians practicing obstetrics and obstetricians/gynecologists have been studied for years. Most of the studies comparing deliveries of family physicians and OB/GYNs have been limited to low risk pregnancies. Family physicians practicing obstetrics are often the only obstetrics providers in rural, underserved areas. They need to be able to practice independently and manage more than just low risk pregnancies.

Methods: Data were obtained from the medical records of 26,331 deliveries at DCH Regional Medical Center in Tuscaloosa, Alabama and Northport Medical Center in Northport, Alabama between January 1, 2006 and December 31, 2013.

Results: Obstetrics fellowship trained family physicians and obstetrician/gynecologists have comparable neonatal outcomes including respiratory distress syndrome, transient tachypnea of the newborn, birth trauma, fractured clavicle, Erb's Palsy, neonatal death, cephalohematoma, pneumothorax and seizure. Family physicians had slightly more infants with sepsis than obstetrician/gynecologists and this was statistically significant (1.66% for family physicians compared to 1.02% for obstetrician/gynecologists ($p = 0.007$)).

Conclusions: This data suggest that obstetrics fellowship trained family physicians have similar neonatal outcomes when compared to obstetrician/gynecologists.

for years[1-4]. There is little difference in infant morbidity when family physicians were compared to obstetricians [5]. While previous studies have evaluated low-risk pregnancies, neonatal outcomes of family physicians practicing obstetrics are comparable to those of obstetrician/gynecologists [1,4,6,7]. In a study by Homan et al in 2013, there were no differences in neonatal outcomes when infants are delivered by family physicians versus obstetrician/gynecologists [8]. Family physicians provide high quality of obstetrical care when compared to OB/GYNs [4].

Family physicians are the most dispersed obstetrical providers in this country and are often the only providers in rural, underserved areas [9,10]. Most rural obstetrics providers do not have OB/GYN back-up. It is imperative to train family physicians to practice obstetrics independently and manage the common complications that may arise. Family medicine obstetrics fellowships and enhanced obstetrics tracts were designed to train physicians to practice obstetrics independently where there are no obstetricians, especially in rural areas [10].

Complications can occur with any delivery and only managing low-risk pregnancies is not practical in rural, underserved areas. This study was designed to determine any differences in neonatal outcomes between obstetrics fellowship trained family physicians and obstetrician/gynecologists. Neonatal outcomes evaluated in this study include respiratory distress syndrome, transient tachypnea of the newborn, neonatal sepsis, birth trauma, clavicular fracture, Erb's Palsy, neonatal death, cephalohematoma, pneumothorax and neonatal seizures.

Introduction

Neonatal outcomes of infants delivered by family physicians practicing obstetrics and obstetrician/gynecologists have been studied

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Materials and Methods

This study was approved by the Institutional Review Boards of The University of Alabama and DCH Regional Medical Center in Tuscaloosa, Alabama. This study is a retrospective investigation of de-identified birth-related information at DCH Regional Medical Center in Tuscaloosa, Alabama and Northport Medical Center in Northport, Alabama from January 1, 2006 through December 31, 2013. DCH Regional Medical Center is a 583-bed teaching and community hospital and tertiary referral center for West Alabama. Northport Medical Center is 204 bed community hospital that is part of the DCH Healthcare System.

Obstetrics privileges are granted to both obstetrician/gynecologists and family medicine physicians who have completed a one year obstetrics fellowship. Obstetrician/gynecologists are granted OB/GYN privileges from the Department of Obstetrics and Gynecology at each hospital. Family physicians are granted obstetrics privileges from the Department of Family Medicine at each hospital. Obstetrics privileges are the same for both specialties. Both are expected to manage any obstetric patient, regardless of acuity, complication, or diagnosis. Family physicians do not have an OB/GYN back-up. Physicians were placed into two groups: obstetrician/gynecologists and obstetrics fellowship trained family medicine physicians. Characteristics of each group are found in [table 1](#). Both groups of physicians delivered babies at both hospitals.

The medical records and quality assurance departments at both hospitals were authorized to access the medical records and provide the investigators with de-identified data from the deliveries of 26,331 infants delivered by both obstetrics fellowship trained family medicine physicians and obstetrician/gynecologists from the period January 1, 2006 to December 31, 2013. The patients, newborns, delivering physicians, types and dates of delivery are unknown to the investigators. The deliveries are both cesarean sections and vaginal deliveries. There are sufficient numbers of physicians that no single physician could be identified. The hospital medical records personnel separated the deliveries by physician types and this was unknown

to all the investigators. Once the de-identified data was supplied by hospital personnel, it was stored on an encrypted desktop computer that was password protected and located in a locked office with limited access. The data was analyzed using SAS version 9.3 statistical software.

Results

Ten common neonatal outcomes were selected and assessed from medical records with totals for four obstetrics fellowship trained family physicians and 18 obstetrician/gynecologists. The totals for each category were obtained and separated by the two specialties. These data along with incidences and statistics are found in [table 2](#). This study electronically evaluated 26,331 infants from deliveries at DCH Regional Medical Center in Tuscaloosa, Alabama and Northport Medical Center in Northport, Alabama between January 1, 2006 and December 31, 2013. Family physicians delivered 2,049 (8%) of the infants and obstetrician/gynecologists delivered 24,282 (92%) of the infants. One of the obstetrics fellowship trained family physicians died in 2011 and another stopped practicing obstetrics in 2013.

Respiratory Distress Syndrome (RDS)

Respiratory Distress Syndrome (RDS) or Hyaline Membranes Disease is a common etiology of respiratory distress in preterm infants [11]. The incidence of Respiratory Distress Syndrome (RDS) in both groups was 2.34% ($p = 0.198$). This is within the range of 0.45% to 2.4% reported in the literature [12].

Transient Tachypnea of the Newborn (TTN)

Transient Tachypnea of the Newborn (TTN) is the most common etiology of respiratory distress in newborns [11]. TTN is characterized by excessive lung fluid after delivery, which usually resolves in 48 hours [11]. The incidence of TTN for family physicians was 2.98% and for OB/GYNs 3.75%. There was no statistical difference between the two ($p = 0.074$). Both fall within the range of 0.3% to 3.9% reported in in the literature [12].

Neonatal sepsis

Neonatal sepsis is infection in the first 28 days of life and is a common cause of death in newborns [13]. The incidence of sepsis in infants delivered by family physicians was 1.66% and is higher than that for OB/GYNs which is 1.02%. These were statistically significant ($p = 0.007$). The incidence of neonatal sepsis reported in the literature ranges from 0.1% to 0.9% [12,13]. The incidence for both groups of physicians is higher than reported in the literature [12,14].

Birth trauma

Birth trauma is defined as nerve injuries or fractures in conjunction with delivery of the fetus [12]. The incidence of birth trauma including brachial plexus injury, fractured clavicle and facial nerve palsy was 0.63% for family physicians and 0.46% for OB/GYNs. These were not statistically significant ($p = 0.273$). The incidence of

Table 1: Characteristics of physicians in this study

Physicians	Family Physicians	Obstetrician/Gynecologists
Number	4 ¹	18
Residency	Family Medicine	Obstetrics & Gynecology
ACGME Accredited	Yes	Yes
Length (years)	3 years	4 years
Board Certified	ABFM ²	ABOG ³
Hospital Privileges	Family Medicine	Obstetrics & Gynecology
Experience (years)	1 to 22 ¹	3 to 30
Fellowship	Obstetrics ⁴	No

¹One of the obstetrics fellowship trained family physicians died in 2011 and another stopped practicing obstetrics in 2013.

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⁴Three family physicians completed 1 year obstetrics fellowships. One family physician completed an unofficial, proctored year of obstetrics.

Table 2: Statistics of neonatal outcome categories

	OB/GYN (n = 24,282)	FM/OB (n = 2,049)	p Value	Incidence in Literature
Diagnosis	n (%)	n (%)		
RDS	469 (2.34%)	48 (2.34%)	0.198	0.45% - 2.4% (13)
TTN	911 (3.75%)	61 (2.98%)	0.074	0.3% - 3.9% (13)
Sepsis	247 (1.02%)	34 (1.66%)	0.007	0.6% - 0.9% (16)
Birth Trauma	112 (0.46%)	13 (0.63%)	0.273	0.6% - 0.8% (17)
Fractured Clavicle	84 (0.35%)	9 (0.44%)	0.494	0.2% - 1.1% (13, 19)
Erb's Palsy*	29 (0.12%)	4 (0.20%)	0.322	0.05% - 0.4% (13)
Neonatal Death*	9 (0.04%)	2 (0.10%)	0.209	0.4% - 0.45% (13, 21, 23)
Cephalohematoma	484 (1.99%)	49 (2.39%)	0.219	1.5% - 2.5% (13)
Pneumothorax	186 (0.77%)	17 (0.83%)	0.752	1% - 2% (14)
Seizure	143 (0.59%)	17 (0.83%)	0.178	>36 weeks 14.1% (29)

birth trauma was both groups is in line with the incidence of 0.6% to 0.8% reported in the literature [15].

Clavicular fracture

The clavicle is the most commonly fractured bone during delivery and is often associated with large infants and a shoulder dystocia [16]. The incidence of fracture of the clavicle for family physicians was 0.44% and OB/GYNs was 0.35%. These were not statistically significant ($p = 0.494$). The incidence of clavicular fracture for both groups is within the range reported in the literature of 0.2% to 3.5% [12,17]. Clavicular fractures are difficult to diagnose and underreported because the infant is often asymptomatic [12].

Erb's palsy

Erb's Palsy is the flaccid paralysis of an arm following delivery associated with a brachial plexus injury [18]. The incidence of Erb's Palsy in this study was 0.20% for family physicians and 0.12% for OB/GYNs. There is no statistical difference ($p = 0.322$). The incidence for both groups is within the range reported in the literature of 0.05% to 0.4% [12].

Neonatal mortality rate

Neonatal mortality is the death of a newborn in the first 28 days of life [19,21,22]. The most common cause is prematurity and its complications [20]. The neonatal mortality rate was 0.10% for family physicians and 0.04% for OB/GYNs. These were not statistically significant ($p = 0.209$). Both groups were below the rate reported in the literature of 0.4% to 0.45% [12,19,21].

Cephalohematoma

A cephalohematoma is a subperiosteal collection of blood beneath the scalp in a newborn [12]. The incidence of cephalohematoma in infants delivered by family physicians was 2.39% and OB/GYNs 1.99%. These were not statistically significant ($p = 0.219$). The incidence is 1.5 to 2.5% reported in the literature [12]. Both groups fall within the reported incidence in the literature.

Pneumothorax

A pneumothorax is air in the pleural space and is a common cause of respiratory distress in newborns [11]. The incidence of pneumothorax in this study was 0.83% for family physicians and 0.77% for OB/GYNs. These were not statistically significant ($p = 0.752$). Both groups fall below the reported incidence of pneumothorax of 1 to 2% in term infants in the literature [11].

Neonatal seizures

Neonatal seizures are usually evidence of neurologic dysfunction [22]. The incidence of seizures in this study was 0.83% for family physicians and 0.59% for OB/GYNs. These were not statistically significant ($p = 0.178$). The overall incidence of seizures in neonates admitted to a neonatal intensive care unit was 8.6% [22]. The rate depends on the gestational age with 4.8% at 30 to 36 weeks, 11.9% for infants less than 30 weeks and 14.1% for infants greater than 36 weeks [22]. Both groups are below the reported incidences above.

Discussion

Obstetrics fellowship trained family physicians and obstetrician/gynecologists have comparable neonatal outcomes including respiratory distress syndrome, transient tachypnea of the newborn, birth trauma, fractured clavicle, Erb's Palsy, neonatal death, cephalohematoma, pneumothorax and seizure. Family physicians had slightly more infants with sepsis than obstetrician/gynecologists and this was statistically significant (1.66% vs. 1.02%) ($p = 0.007$). If neonatal sepsis could have been separated into early and late onset, early onset may have better to evaluate obstetrical care. This study is limited by the lack of comparative data of the patients and of the two groups of physicians which would have been helpful. Only 8% of the deliveries were performed by family physicians. A larger sample size of deliveries by family physicians would have made the results more generalizable.

This data suggest that family physicians trained by obstetrics fellowships provide adequate obstetrical care with comparable neonatal outcomes. It is important that in our study, obstetrics fellowship trained family physicians and obstetrician/gynecologists have the same privileges while other academic hospitals, family medicine privileges may be limited.

Family physicians provide the full spectrum of lifelong care and are more likely to be located in rural, underserved areas where need is the greatest. They can practice independently and manage most common complications of pregnancy without obstetrical back-up as is required in many rural, underserved areas of the United States where there are no obstetrician/gynecologists [6]. Obstetrics fellowship family physicians who practice obstetrics and provide newborn care are an integral component in reducing the maternal and perinatal morbidity and mortality in this country.

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