Does the presence of learners affect family medicine obstetric outcomes?

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Abstract

Objective To compare patient outcomes and complications before and after involvement of family medicine residents in intrapartum care.

Design Secondary data analysis.

Setting London, Ont.

Participants Obstetric patients of a family physician with a special interest in obstetrics.

Main outcome measures Total number of births attended and births missed, as well as rates of inductions, augmentations for dystocia, augmentations for prelabour ruptured membranes, types of births (ie, normal vaginal, vacuum-assisted, low and outlet forceps deliveries; cesarean sections; and obstetrician-assisted vaginal births), and perineal outcomes (ie, intact; first-, second-, third-, or fourth-degree tears; episiotomies; and episiotomies with third- or fourth-degree extensions).

Results During the period of time when family medicine residents were involved in intrapartum care, women sustained slightly more second-degree tears, and more cesarean sections were performed. Fewer women had vacuum-assisted births or unmedicated births. There were no significant differences in rates of normal vaginal births, low and outlet forceps deliveries, and perineal trauma (other than second-degree tears) including episiotomies.

Conclusion Women experienced slightly more second-degree tears when residents were involved in their deliveries. The increased number of second-degree tears might be because of residents' limited experience in providing intrapartum care. More important, there was no increase in other serious perineal trauma or episiotomy when residents provided supervised intrapartum care. This should reassure women and family practice obstetricians who choose to receive and provide obstetric care in a family practice teaching unit. The increase in rates of epidural use and cesarean sections and the decrease in rates of vacuum-assisted births reflect obstetric trends in Canada over the past decade.

EDITOR'S KEY POINTS

- In this study, a family physician with a special interest in obstetrics presents data on outcomes for births she attended over a 13-year period. The data were divided into 2 categories: solo family practice obstetric care (7 years) and academic family practice obstetric care (6 years). This enabled a comparison of women's outcomes before and after residents became involved in labour and birth.

- This study found no significant differences in various obstetric outcomes before and during family medicine resident involvement, including total births and rates of procedures (eg, inductions, augmentations), types of births (except for vacuum-assisted births and cesarean sections), perineal trauma (except for second-degree tears), and types of pain relief (except unmedicated births).

- The data presented should reassure new academic recruits and their patients that obstetric outcomes are not significantly affected when residents are involved. Academic family physicians providing intrapartum care should encourage more residents to feel competent to include obstetrics in their careers.

This article has been peer reviewed.
Can Fam Physician 2015;61:e504-8

La présence de résidents affecte-t-elle les issues des accouchements en médecine familiale?

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Résumé

Objectif Comparer les issues et les complications des patientes avant et après la participation de résidents en médecine familiale aux soins pernataux.

Type d'étude Analyse rétrospective de données.

Contexte London, Ontario.

Participantes Les patientes d'une médecin de famille qui possède un intérêt particulier pour l'obstétrique.

Principaux paramètres à l'étude Le nombre total des accouchements effectués et celui des accouchements manqués, de même que les taux de déclenchement, de complications en raison de dystocies, de complications par rupture prématurée des membranes, les types d'accouchement (p. ex. vaginal normal, assisté par ventouse, avec forceps bas ou de sortie; césariennes; et accouchement vaginal avec l'aide d'un obstétricien) et issues périnéale (p. ex. périnée intact; déchirure du premier, deuxième, troisième ou quatrième degré; épisiotomies; et épisiotomies avec extensions du troisième ou du quatrième degré).

Résultats Au cours de la période durant laquelle des résidents participaient aux soins pernataux, les femmes ont eu un peu plus de césariennes et de déchirures du deuxième degré. Il y a eu très peu d'accouchements naturels ou d'utilisation de ventouses. On n'a observé aucune différence significative entre les taux d'accouchements vaginaux normaux, d'accouchements avec forceps bas ou à la sortie et de lésions périnéales (autres que les déchirures du deuxième degré) incluant les épisiotomies.

Conclusion Les patientes ont eu un peu plus de déchirures du deuxième degré quand des résidents participaient à leur accouchement. Cela pourrait dépendre d'un manque d'expérience des résidents dans les soins pernataux. Mais ce qui est plus important, c'est qu'il n'y a pas eu plus d'épisiotomies ni de lésions périnéales sévères lorsque des résidents étaient responsables de superviser les accouchements. Cela devrait rassurer les femmes et les médecins de famille qui choisissent de pratiquer l'obstétrique dans une unité d'enseignement de médecine familiale. L'augmentation des taux d'épidurales et de césariennes et la diminution des taux d'accouchements assistés par ventouse reflètent les tendances de la pratique obstétricale au cours de la dernière décennie au Canada.

POINTS DE REPÈRE DU RÉDACTEUR

- Dans cet article, une médecin de famille possédant un intérêt particulier en obstétrique nous présente les données des accouchements qu'elle a effectués au cours d'une période de 13 ans. Ces données ont été réparties en 2 catégories : les accouchements effectués en pratique obstétricale solo (7 ans) et ceux effectués dans une unité d'obstétrique familiale universitaire (6 ans). Cette répartition permet de comparer les issues des patientes avant et après que des résidents aient participé au travail et aux accouchements.

- L'étude n'a montré aucune différence significative dans les différentes issues obstétricales avant ou après la participation de résidents, incluant le nombre total de naissances et les taux d'intervention (p. ex. déclenchements, complications), les types d'accouchement (sauf pour les accouchements assistés par ventouse et les césariennes), les lésions péri-anales (sauf les déchirures du deuxième degré) et le type d'analgésie (sauf pour les accouchements naturels).

- Les données présentées devraient rassurer les nouvelles recrues des unités universitaires ainsi que leurs patientes à l'effet que les issues obstétricales ne sont pas affectées de façon significative par la participation de résidents. Les médecins de famille qui prodiguent des soins obstétricaux dans des unités universitaires devraient encourager davantage de résidents à se juger assez compétents pour inclure l'obstétrique dans leur pratique future.

Cet article a fait l'objet d'une révision par des pairs.
Can Fam Physician 2015;61:e504-8

When we reach milestones in practice, it is a time for us to reflect on the past and look forward to the future. By the end of 2008, the physician author—a family physician with a special interest in obstetrics—had been in practice for 21 years and involved with 1624 births. From 1996 onward, data on the types of births and complications during the deliveries she attended were documented in a comprehensive database. In 2003, the author joined an academic teaching unit, which provided an opportunity to compare patient outcomes before and after family medicine residents became involved in intrapartum care.

Several articles have reviewed evaluations of residency training and patient outcomes.[1,2] Van der Leeuw et al found that most studies reported patient care was safe and of equal quality when delivered by residents, providing there was adequate supervision, room for extra operating time, and evaluation of and attention to individual competence of residents.[1] Enhanced supervision improved both patient- and education-related outcomes.[2] No studies were found on the patient outcomes of family medicine residents providing intrapartum care.

Before moving to an academic teaching unit in London, Ont, in 2003, the author provided care in a family practice in the same city. While her practice location moved, the patient population remained consistent. Antenatal and intrapartum care was provided to her own patients, as well as those referred from other doctors. Births were attended at St Joseph's Health Care in London until 2011, when all births in the city moved to the London Health Sciences Centre. Neither the types of patients nor the philosophy of family medicine obstetrics changed with this amalgamation. All residents were from the Victoria Family Medical Centre in London. Eight different residents were present for each 16-week cycle. Residents with a strong interest in obstetrics received more opportunities to be involved in intrapartum care at about a 2:1 ratio compared with other residents. For this analysis, the data from 1996 to 2008 have been divided into 2 distinct categories: midcareer solo family practice obstetric care (1996 to 2002) and academic family practice obstetric care (2003 to 2008). This enables a comparison of women's outcomes before and after residents became involved in labour and birth. The objective was to reassure both women receiving intrapartum care in a teaching practice unit and those family physicians who might be considering a career in an academic setting.

Ethics approval was granted by the Office of Research Ethics at Western University in London in September 2008.

METHODS

From 1996 onward, all births attended by the author were recorded in a database. The following data were recorded and complete for all births: total births attended; number of births missed; and rates of inductions, augmentations for dystocia, augmentations for prelabour ruptured membranes, types of births (normal vaginal, vacuum-assisted, low and outlet forceps deliveries; cesarean sections; and obstetrician-assisted vaginal births), and perineal outcomes (intact; first-, second-, third-, and fourth-degree tears; episiotomies; and episiotomies with third- and fourth-degree extensions). The data were collated yearly. Thirteen years of data and 1127 births were reviewed (641 births in solo practice over 7 years, and 486 births in academic practice over 6 years), and then *t* tests were performed. Outcomes were also compared using χ^2 or ANOVA (analysis of variance) tests, with the St Joseph's Health Care London perinatal 2007 database, which gathers statistics on all obstetrics providers in that institution. A PubMed literature search was conducted from 1970 to 2008 using the following MeSH terms: *obstetrics; education, medical* (and its associated more specific terms); *teaching; learning; family practice;* and *physicians, family*. For the outcomes search (from 1966 to 2008), the following MeSH terms were used: *obstetrics; delivery; obstetric; education, medical* (and its associated more specific terms); *teaching; learning; family practice*; *physicians, family; outcome assessment* (health care); and *pregnancy outcome*.

RESULTS

All variables included in the author's perinatal database were evaluated except for the births she did not personally attend. There were no significant differences found in the following obstetric outcomes before and during family medicine resident involvement: total births; rates of inductions, augmentations for dystocia, or augmentations for prelabour rupture of membranes; rates of normal vaginal births, low and outlet forceps deliveries, and obstetrician-assisted vaginal births; and rates of intact perineum, first-degree perineal tears, third-degree tears, fourth-degree tears, episiotomies, episiotomies with third-degree extensions, or episiotomies with fourth-degree extensions; and rates of nitrous oxide and general anesthesia use. More cesarean sections ($P=.040$) and more second-degree tears ($P=.009$) occurred when residents were involved. Fewer unmedicated births ($P=.001$) and fewer vacuum-assisted births ($P=.012$) occurred during resident involvement (**Table 1**). Among the various care provider groups at St Joseph's Health Care in London in 2007 (family physicians; the author with residents; obstetricians with residents; and midwives), rates of perineal trauma were similar ($P=.068$) (**Table 2**).

DISCUSSION

These data present several important points: there were

Table 1. Obstetric outcomes during solo family practice and academic teaching unit practice

OBSTETRIC OUTCOMES	SOLO FAMILY PRACTICE (1996-2002)	ACADEMIC TEACHING PRACTICE UNIT (2003-2008)	*t* TEST	*df*	*P* VALUE
Total no. of births	641	486			
Mean no. of births per y	91.57	81.00	1.686	11	.120
Type of procedure, %					
• Inductions	7.98	11.58	-1.622	11	.133
• Augmentations for dystocia	2.91	6.72	-2.092	11	.060
• PROM augmentations	9.28	11.53	-1.020	11	.330
Type of birth, %					
• Normal vaginal births	78.43	79.33	-0.464	11	.652
• Vacuum-assisted births	4.89	0.80	2.990	11	.012*
• Low and outlet forceps deliveries	2.29	2.47	-0.183	11	.858
• Cesarean sections	11.71	16.30	-2.322	11	.040*
• Obstetrician-assisted vaginal births	2.67	1.70	0.937	11	.369
Perineal trauma, %					
• Intact perineum	40.05	38.33	0.692	11	.503
• First-degree tear	16.58	12.21	1.828	11	.095
• Second-degree tear	32.24	39.68	-3.153	11	.009*
• Third-degree tear	1.78	2.42	-0.612	11	.553
• Fourth-degree tear	0.79	0.75	0.061	11	.953
• Episiotomy	7.01	6.41	0.395	11	.700
• Episiotomy with third-degree extension	0.18	1.33	-1.856	11	.090
• Episiotomy with fourth-degree extension	0.62	0.00	1.279	11	.227
Type of pain relief, %					
• Unmedicated	39.61	24.09	4.481	11	.001*
• Nitrous oxide	0.58	2.20	-1.908	11	.083
• General anesthetic	0.18	0.54	-.670	11	.517

PROM—premature rupture of membranes.
*Statistically significant values.

more second-degree tears, more cesarean sections, fewer vacuum-assisted births, and fewer unmedicated births when residents were involved in obstetric care.

The increased rate of second-degree tears might be because of the inexperience of the resident providers despite being supervised by the author. With increased experience among resident providers, the rate of second-degree tears should decrease. More important, there was no significant increase in more serious perineal trauma, such as third- and fourth-degree tears and episiotomies. With respect to women's sexual function, morbidity rates of the effects of second-degree tears are higher compared with no tears, but are much lower than for third- or fourth-degree tears or episiotomies.[3,4] It seems that even with this higher second-degree tear rate when residents were involved, there was no difference between the rate of perineal trauma compared with other family physicians, obstetricians with residents, or midwives in 2007 (**Table 2**).

Decisions about whether to use vacuum or forceps were made by the author, as were decisions about induction, augmentation, and need for episiotomy. Teaching of these skills occurs through simulation and during formal obstetric rotations. The increased rate of cesarean sections and decreased rate of unmedicated birth mirror local and Canadian trends and therefore might be due to changing obstetric trends rather than resident involvement.[5]

The data presented in this review should reassure women of the competent care being provided by supervised family medicine residents as part of their care team.

The number of family physicians who provide intrapartum care continues to decrease.[6-8] Recruiting faculty members who provide intrapartum care to family medicine residencies has been difficult.[8,9] The data presented should reassure new academic recruits and their patients that obstetric outcomes are not significantly affected when residents are involved. More academic family

Table 2. Comparison of intact perineum and perineal trauma rates among health provider groups at St Joseph's Health Care London in 2007: $\chi^2_3 = 7.12$; P = .068.

HEALTH PROVIDER GROUP	INTACT PERINEUM, %	PERINEAL TRAUMA, %
All family doctors*	43.72	56.27
Author with residents	42.25	57.75
Obstetricians with residents	36.89	63.11
Midwives*	31.72	68.27

*Rates do not add to 100% owing to rounding.

physicians providing intrapartum care should encourage more residents to feel competent to include obstetrics in their careers.

Strengths and limitations

The strength of this study is that it allowed the direct comparison of 1 provider's obstetric outcomes before and after the involvement of family medicine residents in deliveries. There have been no studies to date that assess the differences for birthing mothers between nonteaching and teaching practices. Having such a comprehensive longitudinal set of data allowed for analysis of outcome changes for a single-practice family physician. The study's limitation is that it is representative of 1 practice and 1 practitioner. More family physicians working with and without residents will need to create a comprehensive database to make these outcomes more generalizable. This could be exciting research for hospitals with family physicians who work with and without family medicine residents.

Conclusion

Literature from other residency training programs has shown that patient care appears safe and of equal quality when delivered by adequately supervised residents. This study, involving family medicine residents in intrapartum care, discovered a slightly higher rate of second-degree tears and no increased rate of other perineal trauma. This seems to be a reasonable risk considering the importance of training more family physicians to provide antenatal and intrapartum care. The presence of family medicine residents at births strengthens the relationship between resident, preceptor, and family. It is hoped that this will encourage more residents to provide intrapartum obstetrics in their future careers.

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Competing interests
None declared

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