Examining Caesarean Section Rates in Canada Using the Robson Classification System

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Abstract

Objective: To determine the groups within the obstetric population contributing most substantially to the Caesarean section rate in five Canadian provinces.

Methods: Hospital births from five participating provinces were grouped into Robson's 10 mutually exclusive and totally inclusive classification categories. The relative contribution of each group to the overall CS rate, relative size of group, and CS rate were calculated for British Columbia, Alberta, Ontario, Nova Scotia, and Newfoundland and Labrador for the four-year period from 2007–2008 to 2010–2011.

Results: In all five provinces (accounting for approximately 64% of births in Canada), and for all years examined, the group making the largest relative contribution to the CS rate was women with at least one previous CS and a term, singleton, cephalic-presenting pregnancy (Robson Group 5). The CS rate for this group ranged from 76.1% in Alberta to 89.9% in Newfoundland and Labrador in 2010 to 2011, accounting for 11.3% of all deliveries. The rate of CS for Group 5 decreased slightly over the four years, except in Ontario. The next largest contributing group was nulliparous women with a term, singleton, cephalic-presenting pregnancy. Those with induced labour or Caesarean section before labour (Robson Group 2) had CS rates ranging from 34.4% in Nova Scotia to 44.6% in British Columbia (accounting for 13.1% of all deliveries), and those with spontaneous onset of labour (Robson Group 1) had CS rates of 14.5% to 20.3% in 2010 to 2011 (accounting for 23.6% of all deliveries).

Conclusion: All hospitals and health authorities can use this standardized classification system as part of a quality improvement initiative to monitor Caesarean section rates. This classification system identifies relevant areas for interventions and resources to reduce rates of Caesarean section.

Key Words: Caesarean section, Robson classification, quality improvement

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Résumé

Objectif : Déterminer les groupes qui, au sein de la population obstétricale, contribuent le plus substantiellement au taux de césarienne dans cinq provinces canadiennes.

Méthodes : Les accouchements menés à l'hôpital au sein des cinq provinces participantes ont été répartis en fonction des 10 catégories de classification mutuellement exclusives et totalement inclusives de Robson. La contribution relative de chacun des groupes au taux global de césarienne, la taille relative de groupe et le taux de césarienne ont été calculés pour la Colombie-Britannique, l'Alberta, l'Ontario, la Nouvelle-Écosse et Terre-Neuve-et-Labrador pour ce qui est de la période de quatre ans s'étalant de 2007–2008 à 2010–2011.

Résultats : Dans chacune de ces cinq provinces (au sein desquelles l'on constate approximativement 64 % des naissances au Canada) et pendant toutes les années examinées, les femmes ayant déjà subi au moins une césarienne et connaissant une grossesse monofœtale à terme en présentation céphalique (Groupe 5 de Robson) constituaient le groupe à l'origine de la contribution relative la plus importante au taux de césarienne. Au sein de ce groupe, le taux de césarienne allait de 76,1 % en Alberta à 89,9 % à Terre-Neuve-et-Labrador en 2010-2011, ce qui représente 11,3 % de tous les accouchements. Le taux de CS au sein du Groupe 5 a connu

une légère baisse au cours des quatre années de l'étude, sauf en Ontario. Le deuxième groupe en importance en ce qui concerne la contribution au taux de césarienne était composé des nullipares connaissant une grossesse monofœtale à terme en présentation céphalique. Les femmes ayant subi un déclenchement de travail ou une césarienne avant le travail (Groupe 2 de Robson) ont présenté des taux de césarienne allant de 34,4 % en Nouvelle-Écosse à 44,6 % en Colombie-Britannique (ce qui représente 13,1 % de tous les accouchements), tandis que les femmes ayant connu un travail d'apparition spontanée (Groupe 1 de Robson) ont présenté des taux de césarienne allant de 14,5 % à 20,3 % en 2010-2011(ce qui représente 23,6 % de tous les accouchements).

Conclusion : Tous les hôpitaux et toutes les autorités sanitaires peuvent utiliser ce système standardisé de classification dans le cadre d'une initiative d'amélioration de la qualité visant la surveillance des taux de césarienne. Ce système de classification identifie les domaines pouvant faire l'objet d'interventions pertinentes et les ressources pouvant permettre la réduction des taux de césarienne.

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INTRODUCTION

Caesarean section rates have been increasing worldwide over the past few decades, with most countries and regions exceeding the World Health Organization recommended rate of 15% of all deliveries.[1] By 2010, the CS rate in Canada reached 26.9%, up from 17.6% in 1995.[2,3] The rapid increase in CS rates in Canada has received growing attention because Caesarean section is associated with both immediate and later risk of maternal and neonatal complications, and with increased health costs.[4–6]

Historically, the indications for CS have been clinical factors, such as maternal and obstetrical complications, previous CS, dystocia, fetal distress, breech presentation, and malpresentation.[7,8] Recent temporal trends in maternal characteristics that might help explain rising CS rates include increasing maternal age and higher rates of hypertension, diabetes, obesity, and multiple gestation.[9] However, many other factors have contributed to the increasing rate of CS in recent years, including improved surgical techniques, providers' and patients' perception of the safety of the procedure, patient demand, physician practice patterns, and pressures on caregivers to practise "defensive medicine."[10–12]

To address concerns over rising rates of CS and to provide a mechanism for audit and feedback, a 10-group classification system to examine CS within mutually exclusive groups of women with particular obstetric characteristics was proposed by Robson in 2001.[13] The Robson classification system groups women in the obstetric population according to plurality, fetal presentation, parity, obstetric history (i.e., previous CS), course of labour and delivery, and gestational age, providing clinically relevant categories for analyzing and reporting rates of CS.[13] In the Robson system, the overall rate of CS is presented as a composite of individual rates from 10 groups. This not only permits examination of group-specific rates to determine their appropriateness, but also demonstrates how the overall rate of CS is affected by both the magnitude of the group-specific rates and the relative size of each of group, thus identifying groups that make the greatest contribution to the overall rate of CS.[13] Such an analysis gives hospital care providers evidence-based data so they can know where to target their prevention efforts for maximum effect in reducing the rate of CS.

The purpose of this quality improvement exercise was to examine rates of CS using the Robson 10-group classification system to identify groups within the obstetric population that contribute most to CS rates in five Canadian provinces. Identifying these target groups is the first step in developing strategies to reduce rates of CS in Canada. This would then allow evaluation of the between-province similarities in groupings and areas for improvement.

METHODS

The Canadian Perinatal Program Coalition is a voluntary network for provincial maternal child programs to discuss practice issues of common interest and to share de-identified aggregated provincial data to determine similarities and differences, as well as to discuss strategies for quality improvement. We examined aggregated data from a four-year period (April 1, 2007, to March 31, 2008, through April 1, 2010, to March 31, 2011) of hospital deliveries from five Canadian provinces with comprehensive perinatal databases participating in the Canadian Perinatal Program Coalition: British Columbia, Alberta, Ontario, Nova Scotia, and Newfoundland and Labrador. These databases are provincial in scope and most capture 100% of hospital births, except for the Eastern Health Authority regional database, which captures 70% of all NL births. Each database has different mechanisms for data collection; however, all systems have data validation processes for assessing data quality,[14,15] and some groups have published their results.[15,16]

Data for all births (live births and stillbirths) at ≥ 20 weeks' gestational age were grouped into Robson's 10 categories within the province where the data were collected. Overall CS rate, relative size of each group, and relative contribution of each group to the overall CS rate were calculated separately for each province. The Robson classification system is presented in Table 1 using combined data from the five participating provinces for 2010 to 2011. The number of Caesarean sections and the number of deliveries in each group are listed in columns A and