

Article details: 2017-0081	
Title	Are caesarean section rates higher among family physicians than obstetricians? A population-based cohort study using instrumental variable methods
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General comments (author response in bold)	<p>One potential weakness of the study is the blackbox nature of the study description. The Results section shows that the crude rates of caesarean delivery among Family Physicians are less than half the rates among Obstetricians, whereas the adjusted rates are 27% higher among Family Physicians. The paper gives little sense as to how this reversal occurred. Presumably it was because the women delivered by Family Physicians were at substantially lower risk of complications but this is not evident from the Tables or the Results section. In fact, readers do not get to know the rates of caesarean delivery among the Family Physicians and the Obstetricians. This does not imply a methodologic flaw – but the additional information would have provided readers with a better sense of the methodology used and the conclusion reached.</p> <p>This information has now been provided in the new Table 1.</p> <p>The authors hypothesize that ‘family physicians might be less comfortable performing procedural vaginal deliveries than obstetricians, and that this might increase their likelihood of choosing cesarean section’. Based on the Results presented, I do not believe this expectation was met. Thus the adjusted results based on Instrumental Variable analysis showed that the RR for cesarean delivery given delivery by a Family Physician was 1.27 and the RR for procedural delivery was 1.16. Since operative vaginal deliveries constitute some 10-15% of deliveries and since cesarean delivery are more frequent, I would estimate that the adjusted RR for operative vaginal delivery would show that Family Physicians and Obstetricians had a similar rate of operative vaginal delivery (or that Family Physicians had a slightly higher rate).</p> <p>We have included a separate analysis of forceps and vacuum deliveries in Table 3 and found that this reviewer is correct. This has been explained on p12.</p> <p>Instrumental variable analysis is heavily dependent on the choice of Instrumental Variable and the assumptions used. In this analysis, the authors ‘assume that living in an area with a relatively high frequency of delivery by FP increases the likelihood of being delivered by an FP (treatment) without directly acting as a risk factor for cesarean section (outcome) itself.’ This assumption may not be true. One of the difficult to quantify factors that affects a hospital’s cesarean delivery rate is the hospital culture with regard to obstetric intervention. This culture is determined by various factors including geographic location, tier of service, academic affiliation, availability of infrastructure and personnel resources, etc. Hospital culture may also determine the proportion of family physician conducting deliveries in the hospital. In the current Canadian climate, the relation between hospital culture and caesarean delivery rates are more easily understood by considering the proportion of hospital deliveries attended by midwives. Some support for this contention is also evident in the different proportion of deliveries to aboriginal women and the different proportions of tier 3 hospitals by FP delivery rate seen in this study (Table 1).</p> <p>See “Instrumental Variable,” p7-8 for discussion of our choice of IV, including references to two articles having previously used similar (in one case identical) instrumental variables to ours. The capabilities as well as limitations of the IV technique are discussed here further, as well as in the additional information in the appendix.</p> <p>Additionally, the “Interpretation” on page 12-13 now includes discussion of the issues identified by the reviewer here, including the possibility of bias. Furthermore, we have suggested that issues of hospital culture may be a factor contributing to the discrepancy between our logistic regression and IV-adjusted results, highlighting this for further study (see “Interpretation,” p12-13).</p> <p>5MD60 and 5MD53-55 are not ICD-10 CA codes. They are codes from the Canadian Classification of Health Interventions.</p> <p>Corrected. See “Method,” p6 and “Study Outcome and Statistical Analysis,” p9.</p>