

Associations among Cesarean Section Birth, Post-Traumatic Stress, and Postpartum Depression

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Background

- Cesarean (C-) section deliveries account for nearly 30% of births (Public Health Agency of Canada, 2017).
- Mixed findings link C-sections to postpartum depression (PPD) (Chang et al., 2015; Carter, Frampton, & Mulder, 2006; Meltzer-Brody et al., 2107).
- PPD has a prevalence rate of ~17% in the first year postpartum (Lanes, Kuk, & Tamim, 2011).
- PPD is associated with maternal suicide (Lindahl, Pearson, & Colpe, 2005), reduced quality parent-child attachment and adverse effects on child health and development (Field, 2009; Goecke et al., 2012).
- Mixed findings for an association between C-section and PPD may be due to previous studies' inability to distinguish between C-section types.
- Perceptions of a negative childbirth experience, such as unplanned/emergency C-section, are linked to post-traumatic stress disorder (PTSD) (Verreault et al., 2012), which is related to PPD (White, Matthey, Boyd, & Barnett, 2006).



Research Question

- What is the association between C-section type (planned vs. unplanned/emergency) and PPD?
- Do postnatal PTSD symptoms mediate the association between C-section type and PPD?

Research Design

- Design:** Secondary analysis of mothers who had C-sections in Alberta Pregnancy Outcomes and Nutrition (APrON) longitudinal cohort
- Participants:** 354 adult mothers over 18 years
- Data Collection:** Early and late pregnancy, birth and 3 months postnatal
- Data Analysis:** Hayes (2017) conditional process modeling; controlled for prenatal depression, social support, child gender, and SES

Measures

- PPD:** Edinburgh Postnatal Depression Scale has a Cronbach alpha of 0.87. Range 0-30, with scores above 9 suggest risk for PPD and above 12 likely PPD (Cox, Holden, & Sagovsky, 1987). Measured at 3 months postnatal.
- PTSD:** Psychiatric Diagnostic Screening Questionnaire subscale for PTSD has a Cronbach alpha of 0.94 with a cutoff score of 5. Range 0-15 (Zimmerman & Mattia, 2001). Measured at 3 months postnatal.
- Social Support questionnaire:** Cronbach's alpha of 0.8. Range 0-16, with higher scores indicating more support (Galambos, Leadbeater, & Barker, 2004). Measured in early and late pregnancy and at 3 months postnatal.

Preliminary Results

- Emergency C-section indirectly affects PPD through PTSD
- As compared to planned C-section, emergency C-section increases PTSD scores by 0.44 of a point, which then increases PPD scores by 0.56 of a point
- Indirect effect through PTSD, controlling for prenatal depression, is statistically significant: [b=0.14 (0.09), 95% CI [0.003, 0.371]]
- Direct effect of emergency C-section to PPD is non-significant in the adjusted and non-adjusted models

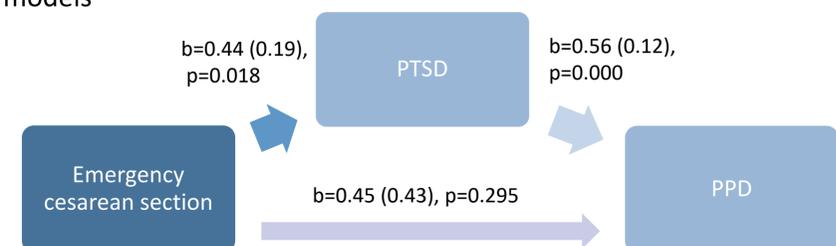


Figure 1: Association between emergency C-section, PTSD, and PPD compared to planned cesarean section

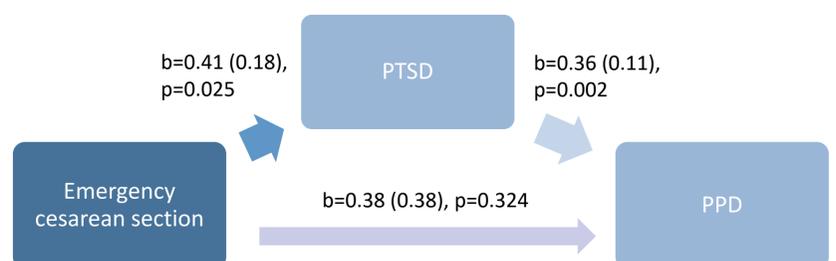


Figure 2: Adjusted model evaluating association between emergency C-section, PTSD, and PPD compared to planned cesarean section, controlling for prenatal depression

Demographic Data

Variables	APrON Participants who had C-Sections (n=354) Frequency (%)
MATERNAL EDUCATION	
Below university degree	89 (25.80)
Degree or more	256 (74.20)
MARITAL STATUS	
Single	7 (1.98)
Married	347 (98.02)
PARITY	
0	220 (62.15)
1	103 (29.10)
2 or more	31 (8.76)
HOUSEHOLD INCOME	
Less than 70k	47 (13.54)
70k or more	300 (86.46)
BIRTH TYPE	
Emergency/Unplanned C-section	198 (55.93)
Planned C-section	156 (44.07)
GESTATIONAL AGE AT BIRTH	
< 37 weeks	31 (8.76)
37 and more weeks	323 (91.24)
PTSD	
0	263 (74.29)
1	54 (15.25)
2	15 (4.24)
3	2 (0.56)
4	6 (1.69)
5 or more	14 (3.96)
	Mean [SD]
Maternal age	32.80 (4.36)
PTSD	0.64 (1.73)
Prenatal depression (Max)	7.03 (4.13)
Perinatal social support (Max)	14.80 (2.22)
Postpartum depression	4.92 (4.12)

Discussion

- Emergency C-section is indirectly associated with PPD in unadjusted and adjusted models (when controlling for prenatal depression).
- These findings support the negative impact that operative deliveries can have upon birth perceptions and subsequently on the development of PPD. Obstetrical interventions are identified as the most influential factor in the development of birth trauma, which is linked with increased risk of PPD and PTSD (Ayers, 2007).
- Knowledge regarding factors contributing to the development of PPD will assist healthcare practitioners in identifying women at risk.