

The Indirect Impact of the COVID-19 Pandemic on Caesarean Section Rates in First Time Mothers in Melbourne

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Introduction

- Melbourne during the COVID-19 pandemic was an opportunity to investigate the indirect effects of lockdown on perinatal care.¹
- Safely constraining CS rates is important to minimise short-term complications and reduce risks for later childbirth. This is particularly important for first time mothers (nulliparous women).

Aim

- To compare CS rates in nulliparous women in lockdown-exposed and pre-lockdown (control) cohorts in metropolitan Melbourne.

Methods

- A retrospective study including births ≥ 24 weeks from all 12 Melbourne public maternity hospitals from Jan 2018 to Mar 2021.
- Pregnancies with a last menstrual period (LMP) from 4 Nov 2019 to 1 Jun 2020 inclusive formed the lockdown-exposed cohort.¹
- Pregnancies with LMPs from 5 Nov 2018 to 3 Jun 2019 and 6 Nov 2017 to 4 Jun 2018 inclusive formed the control cohort.¹
- Robson groups² 1 and 2 formed the primary groups of interest
 - Group 1 – term, cephalic, singleton, nulliparas following spontaneous onset of labour.
 - Group 2A – term, cephalic, singleton, nulliparas following induction of labour.
 - Group 2B – term, cephalic, singleton, nulliparas delivering prior to the onset of labour.
- The four primary outcomes are defined in Table 1.
- χ^2 test for proportions was used; significant p-value defined as <0.05 .

Tables of Results

Table 1. Primary outcome definitions

Primary outcome	Numerator	Denominator
Outcome 1	n of women in a Robson group	Total N pregnancies
Outcome 2	n of CS in a Robson group	Total N pregnancies in a Robson group
Outcome 3	n of CS in a Robson group	Total N pregnancies
Outcome 4	n of CS in a Robson group	Total N pregnancies delivered by CS

- 25,362 births were included in the lockdown-exposed cohort and 50,720 births were included in the control cohort. (Table 2)

Table 2. Caesarean section Robson classification report table

Primary outcomes	Lockdown Exposed	Control	P value
Number of pregnancies	25,362	50,720	
Number of CS births	9,162	17,277	
Overall CS rate (%)	36.13	34.06	0.013
Outcome 1: Robson group size (%)			
Robson 1	15.86	15.94	0.76
Robson 2A	20.23	20.43	0.529
Robson 2B	2.28	1.82	<0.00001
Outcome 2: Robson group CS rate (%)			
Robson 1	17.11	16.5	0.396
Robson 2A	38.8	35.88	<0.00001
Robson 2B	99.65	99.89	0.316
Outcome 3: Absolute contribution to overall CS rate (%)			
Robson 1	2.71	2.63	0.504
Robson 2A	7.85	7.33	0.01
Robson 2B	2.28	1.82	<0.00001
Outcome 4: Relative contribution to overall CS rate (%)			
Robson 1	7.51	7.72	0.537
Robson 2A	21.73	21.52	0.691
Robson 2B	6.3	5.35	0.001

Results

- The CS rate for all pregnancies was significantly higher in the lockdown-exposed group compared to the control group (36.13% vs 34.06%, $p=0.013$).
- The CS rate after SOL for nulliparas (Robson 1) was not significantly different between the lockdown-exposed and control groups (17.11% vs 16.50%, $p=0.40$).
- The CS rate after IOL for nulliparas (Robson 2A) was significantly higher in the lockdown-exposed group compared to the control group (38.8% vs 35.88%, $p<0.00001$).
- Prelabour CS for nulliparas (Robson 2B) formed a greater proportion of total CS during lockdown-exposed group compared to the control group (6.3% vs 5.35%, $p=0.001$).

Conclusion

- The overall CS rate in the lockdown-exposed group was significantly increased compared with the control group.
- Lockdown exposure was not associated with an increase in CS among first time mothers following spontaneous onset of labour.
- In the context of a rising CS rates before the onset of the pandemic, it is unclear if the increases in pre-labour CS and CS after IOL among nulliparous women are directly associated with the pandemic or the continuation of a long term trend.
- Further research priorities include:
 - Conducting a time-series analysis to account for pre-existing trend to rising CS rates.
 - Qualitative research into maternal and clinician decision making behaviours during lockdown.

References

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