

Rate of Preterm Delivery and Stillbirth during COVID-19 Pandemic

Albee H.M. Mak, S. Cicero, P.W. Hui

Department of Obstetrics & Gynaecology, Queen Mary Hospital, Hong Kong

Objective: To examine preterm delivery and stillbirth rates during COVID-19 pandemic in a tertiary hospital in Hong Kong.

Method: Data from 8787 singleton pregnancies who delivered at Queen Mary Hospital between April 2018 to September 2021 were retrieved from the clinical management system and obstetric database. The rates of preterm delivery (before 37 weeks), low birthweight (below 2500 grams) babies and stillbirth were calculated and compared in the **pre-pandemic (April 2018 to September 2019)** and **pandemic (April 2020 to September 2021)** periods.

Results: The total numbers of singleton deliveries during the pre-pandemic and pandemic periods were 5064 and 3723 respectively. More women with **hypertensive** (1.4% vs 0.7%; p=0.002) and **anaemic** (8.9% vs 4.0%; p<0.001) disorders gave birth during the pandemic period; **caesarean delivery rate** also increased (30.7% vs 25.8%; p<0.001). Among women with **spontaneous onset of labour**, there were also **fewer nulliparous women** (43.9% vs 47.9%; p=0.02) and **more women with a history of preterm deliveries** (3.5% vs 2.4%; p<0.05) in the pandemic group.

The mean gestational age at delivery for spontaneous births was 39.29 weeks in the pre-pandemic period and 39.14 weeks in the pandemic period (p=0.01). **Spontaneous preterm deliveries before 37 weeks was significantly higher during the pandemic (2.6% vs 1.7%; p=0.01).** In particular, during the pandemic, both the rate of **spontaneous moderate to late preterm delivery (32 to 36 weeks)** and the rate of **low birthweight babies** were significantly higher (1.9% vs 1.2%; p=0.01 and 8.7 vs 7.4%; p=0.03 respectively), whereas no statistical difference was found in the stillbirth rates (0.24% vs 0.40%; p=0.17). Excluding women with a previous history of preterm deliveries, the spontaneous preterm rate remained significantly higher during the pandemic (2.91% vs 1.21%; p<001).

	Pre-Pandemic Period	Pandemic Period	p-value
Total number of single livebirths	5064	3723	
All Preterm Group	313 (6.2)	231 (6.2)	0.96
Moderate to Late Preterm (32+0 to 36+6 week)	232 (4.6)	175 (4.7)	0.79
Very Preterm (28+0 to 31+6 week)	62 (1.0)	43 (0.9)	0.77
Extreme Preterm (< 28 week)	19 (0.4)	13 (0.3)	0.84
Spontaneous Preterm Group	87 (1.7)	95 (2.6)	0.01
Moderate to Late Preterm (32+0 to 36+6 week)	63 (1.2)	71 (1.9)	0.01
Very Preterm (28+0 to 31+6 week)	15 (0.3)	15 (0.4)	0.40
Extreme Preterm (< 28 week)	9 (0.2)	9 (0.2)	0.27
Mean Birthweight at Delivery (gram)	3139.8	3135.8	0.71
Birthweight at Delivery			
Low Birthweight < 2500 gram	375 (7.4)	324 (8.7)	0.03
Very Low Birthweight < 1500 gram	56 (1.1)	41 (1.1)	0.98
Extreme Low Birthweight < 1000 gram	22 (0.4)	14 (0.4)	0.67

* Number of total births and preterm deliveries prior to and during the pandemic (percentages expressed in brackets)

Women with hypertensive disorders had a higher possibility of preterm delivery (OR 11.57, 95% CI 7.33-18.28; p<0.001). **COVID-19 pandemic** (OR 2.33, 95% CI 1.46-3.70; p<0.001), **nulliparity** (OR 1.65, 95% CI 1.04-2.62; p=0.03) and **history of preterm delivery** (OR 1645.21, 95% CI 581.53-4654.46; p>0.001) were the key factors associated with spontaneous preterm delivery.

Conclusions: Our study demonstrated that at Queen Mary Hospital in Hong Kong, **during the COVID-19 pandemic, rates of spontaneous preterm delivery and low-birthweight babies increased significantly.** This could be related to an increase in maternal stress, or a change in behavioural patterns for pregnant women.