

The impact of COVID-19 first wave national lockdowns on perinatal outcomes: a rapid review and meta-analysis

PRESENTER: **Christine Vaccaro**

BACKGROUND

- Preventative public health measures, including lockdown strategies, were declared in most countries to control COVID-19 transmission.
- Objective:** to evaluate the impact of initial COVID-19 lockdowns on the incidence of perinatal outcomes.

METHODS

- Databases: EMBASE, CORD-19, LitCovid (PubMed), WHO Global research on corona virus disease (COVID-19), and MedRxiv .
- English studies published from the first reports on COVID-19 until 17 July 2021.
- Perinatal outcomes: LBW (< 2500g), PTB (< 37 weeks), and stillbirth.

RESULTS

- 1967 screened articles, 18 publications included.
- Sample size of pregnant women ranged from 3399 to 1599 547 from **15** countries.

Preterm Birth

- 13 studies, with conflicting results. Odds ratios [95% CI] ranging from 0.09 [0.01, 0.40] to 1.93 [0.76, 4.79].

Low Birth Weight

- 3 studies. 1 statistically significant study, rate ratio of 3.77 [1.21, 11.75].

Stillbirth

- 10 studies. 4 statistically significant studies, adjusted relative risk ranging from 1.46 [1.13, 1.89] to 3.9 [1.83, 12.0].

COVID-19 lockdowns led to sudden changes in birth outcomes, with variations between countries. Pooled results show a significant association between lockdown measures and stillbirth rates.

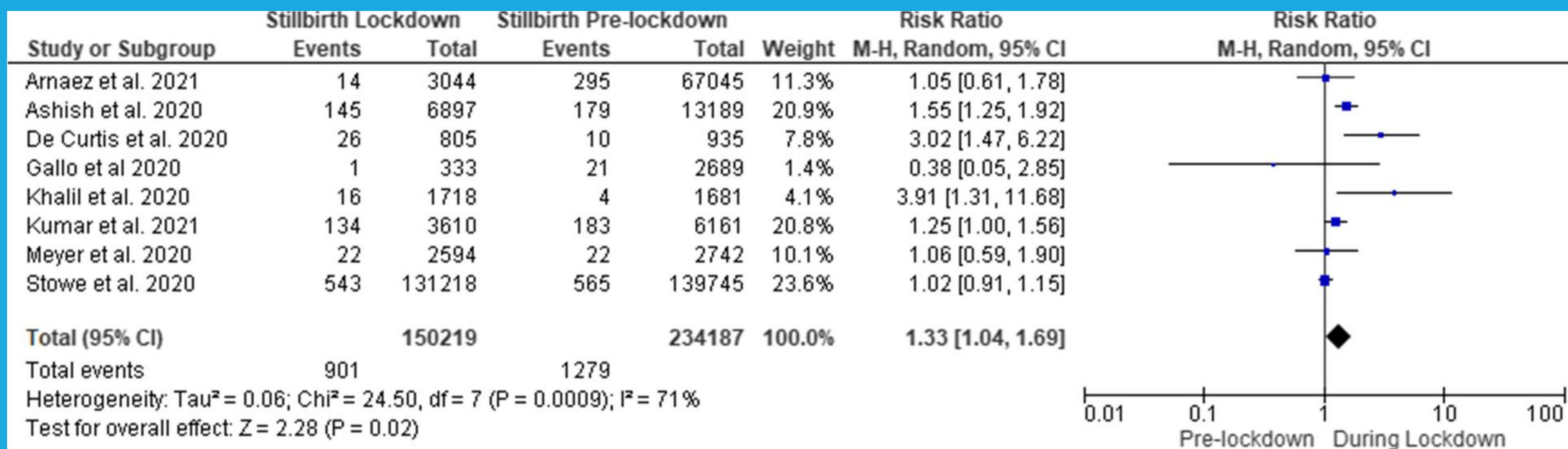


Figure 1. Forest plot of stillbirths before and during COVID-19 lockdown periods.

RESULTS contd.

Meta-Analyses

- 14 studies were pooled in .
- Lockdown period associated with a significant risk of stillbirth: RR = 1.33 [95% CI 1.04, 1.69] when compared to pre-pandemic period.
- Lockdown measures were not associated with a significant risk of PTB, LBW and VLBW compared to pre-pandemic periods.

CONCLUSIONS and FUTURE

RECOMMENDATIONS

- Criteria that led to unexpected changes in LBW, PTB, and stillbirth remains unclear.
- Pooled results show a significant association between lockdown measures and stillbirth rates, but not low birth weight rates.
- Further studies warranted: examine differences in other countries' lockdowns and sociodemographic groups from low to middle-income countries.
- Learning from changes in perinatal outcomes during COVID-19 lockdowns poses an opportunity to reduce the leading causes of childhood mortality worldwide.

STUDIES INCLUDED IN THE REVIEW

- Arnaez J, Ochoa-Sangrador C, Caserio S, Gutiérrez EP, Jiménez M, del P, Castañón L, et al. Lack of changes in preterm delivery and stillbirths during COVID-19 lockdown in a European region. *Eur J Pediatr.* 2021;180(6):1997-2002.
- Ashish KC, Gungor R, Kinney M V, Sunny AK, Moineddin M, Basnet O, et al. Effect of the COVID-19 pandemic response on intrapartum care, stillbirth, and neonatal mortality outcomes in Nepal: a prospective observational study. *Lancet Glob Heal.* 2020;8(10):e2731-31.
- Castiglia EC, Magosi LE, Zari R, Disoko M, Mayandi G, Mabuta J, et al. Modest reduction in adverse birth outcomes following the COVID-19 lockdown. *Am J Obstet Gynecol.* 2021;224(6):615.e1-615.e12. <https://doi.org/10.1016/j.ajog.2020.12.1198>.
- De Curtis M, Villani L, Polo A. Increase of stillbirth and decrease of late preterm infants during the COVID-19 pandemic lockdown. *BMJ Arch Dis Child Fetal Neonatal Ed.* 2020;0:F1. <https://doi.org/10.1136/archdischild-2020-037299>.
- Gallo LA, Gallo TF, Borg DJ, Moritz KM, Clifton VL, Kumar S. Preterm birth rates in a large tertiary Australian maternity centre during COVID-19 mitigation measures. *medRxiv.* 2020;01:2020.11.24.20237929. <https://doi.org/10.1101/2020.11.24.20237929>.
- Hedemann G, Hedley PL, Bakvaad-Hansen M, Hjalgrim H, Rostgaard K, Povarisrak P, et al. Danish premature birth rates during the COVID-19 lockdown. *Arch Dis Child Fetal Neonatal Ed.* 2021;106(3):F93-5.
- Huseynova R, Bin Mahmoud L, Abdelrahim A, Al Hamaid M, Almuhaime MS, Jaganathan PP, et al. Prevalence of preterm birth rate during COVID-19 lockdown in a tertiary care hospital, Riyadh. *Cureus.* 2021;13(3):1-8.
- Justinian N, Shahak GGO, et al. Lockdown with a Price: the impact of the COVID-19 pandemic on prenatal care and perinatal outcomes in a tertiary care center. *Isr Med Assoc J.* 2020;22(9):533-7.
- Khalil A, von Döbeln P, Draycott T, Upumadu A, O'Brien P, Magee L. Change in the incidence of Stillbirth and Preterm Delivery During the COVID-19 Pandemic. *JAMA.* 2020;324(7):705-6. <https://doi.org/10.1001/jama.2020.12746>.
- Kirchengast S, Hartmann B. Pregnancy outcome during the first covid 19 lockdown in Vienna, Austria. *Int J Environ Res Public Health.* 2021;18(7):1-14.
- Matheson A, McGannon CJ, Malhotra A, Palmer KR, Stewart AE, Wallace EM, et al. Prematurity rates during the coronavirus disease 2019 (COVID-19) pandemic lockdown in Melbourne, Australia. *Obstet Gynecol.* 2021;137(3):2019-21.
- Ben J V, Burgos Ochoa L, Bertens LCM, Schoenmakers S, Steegers EAP, Reiss IKM. Impact of COVID-19 mitigation measures on the incidence of preterm birth: a national quasi-experimental study. *Lancet Public Heal.* 2020;5(11):e04-11. [https://doi.org/10.1016/S2468-2667\(20\)30223-1](https://doi.org/10.1016/S2468-2667(20)30223-1).
- Philo R, Purtillo H, Joshi E, et al. Reduction in preterm births during the COVID-19 lockdown in Ireland: a natural experiment allowing analysis of data from the prior two decades. *medRxiv.* 2020; 2020.06.03.20121442.
- Stowe J, Smith H, Thurland K, et al. Stillbirths During the COVID-19 Pandemic in England, April-June 2020. *JAMA.* 2021;325(11). <https://doi.org/10.1001/jama.2020.21369>.
- Meyer R, Bart Y, Tsar A, Yiron Y, Friedrich L, Makner N, et al. A marked decrease in preterm deliveries during the coronavirus disease 2019 pandemic. *Am J Obstet Gynecol.* 2021;224(2):234-7. <https://doi.org/10.1016/j.ajog.2020.10.017>.
- Kumar M, Puri M, Yadav R, Biswas R, Singh M, Chaudhary V, et al. Stillbirths and the COVID-19 pandemic: looking beyond SARS-CoV-2 infection. *Int J Gynecol Obstet.* 2021;153(1):76-82.
- Kumari V, Melito KCR. COVID-19 outbreak and decreased hospitalisation of pregnant women in labour. *Lancet Glob Heal.* 2020;8(9):e1116-7. [https://doi.org/10.1016/S2214-109X\(20\)38192-5](https://doi.org/10.1016/S2214-109X(20)38192-5).
- Shakespeare C, Dube H, Moyo S, Ngwenya S. Resilience and vulnerability of maternity services in Zimbabwe: a comparative analysis of the effect of COVID-19 and lockdown control measures on maternal and perinatal outcomes, a single-Centre cross-sectional study at Mpilo central hospital. *BMC Pregnancy Childbirth.* 2021;21(1):1-8. <https://doi.org/10.1186/s12884-021-03884-5>.

Christine Vaccaro, Farida Mahmoud, Laila Aboulatta, Basma Aloud, & Sherif Eltonsy