Received: 2 September 2022 | Revised: 10 October 2022 | Accepted: 25 October 2022

DOI: 10.1111/apa.16583

ACTA PÆDIATRICA NURTURING THE CHILD WILEY

BRIEF REPORT

Preterm birth rates among twins during the Danish COVID-19 lockdown and when restrictions were relaxed

A Danish nationwide study showed that the reduction in extremely preterm (EPT) births, previously reported during the COVID-19 lockdown period from 12 March to 14 April 2020,[1] was not associated with an increase in the singleton stillbirth rate.[2] However, the singleton birth rate did fall by about 30% during the broader period of 27 February to 30 September 2020, and the neonatal mortality rate was similar to pre-pandemic levels.[2] Some nationwide studies have confirmed that EPT and preterm births were reduced during COVID-19 lockdowns,[2] but other reports have contradicted these findings.[2,3] This may have reflected the different effects that COVID-19 restrictions had on prenatal care provisions and the global societal and economic support pregnant women received. The measures adopted to halt viral transmission also varied considerably between countries and over time.[2] The COVID-19 lockdown has enabled us to identify novel methods that prevent preterm births.[3]

Three subsequent studies, which included Danish data, examined preterm birth rates, but did not exclude multifetal pregnancies.[3–5] This made interpreting the data difficult, as these pose different risk factors for preterm births. This prompted us to examine the effect of the COVID-19 measures on the preterm birth rate and the gestational age distribution in twin pregnancies.

We used data from the Danish Neonatal Screening Biobank to compare the gestational age distribution of twin births, during the lockdown period of 12 March to 14 April 2020, the varying restrictions from 27 February to 30 September 2020 and the pre-pandemic period of 2015–2019. The study was conducted according to Danish legislation and guidelines for register research and was approved by the Data Protection Agency officer at the Statens Serum Institut (number 20/04753).

We looked at live-born infants who survived long enough to have a blood spot samples taken 48–72 h after birth in 2020 and 1.23% were preterm twins. This was marginally lower than the 1.29% in 2015–2019. Analysis of variance showed no significant changes from 2015–2019 in all live twin births ($p = 0.106$) or preterm twin births ($p = 0.733$) as a percentage of all live births.

There were no significant differences in the total proportion of twin preterm births, or births by gestational age, during the lockdown period or the wider period of varying restrictions, compared to 2015–2019 (Table 1). The odds ratio (OR) for EPT twins during lockdown, compared to 2015–2019, was 0.61 (95% CI, 0.01–11.92) (Table 1). Based on the proviso that the confidence intervals were very wide due to the low number of twin births, the two pandemic periods did not seem to have a significant effect on rates of overall preterm births and EPT twin pregnancies.

Studies tend to underestimate the effect of including twin pregnancies,[3–5] in cohorts containing singleton pregnancies. Table 1 shows that the combined OR for singleton and twin EPT births of 0.20 (95% CI, 0.04–0.72) was higher than the OR for singleton births during lockdown, 0.09 (95% CI, 0.01–0.40), compared to 2015–2019. However, this difference was not significant.[1] Including multifetal pregnancies may obscure significant findings among singleton pregnancies, because the prenatal care of twin pregnancies includes different physiological drivers and recommended gestational ages for delivery. This is particularly significant for births up to 32 weeks[2] (Table 1) where the proportion of twins is around 10% (11.94% in 2015–2019 and 11.76% in 2020), rather than around 1.5% of all pregnancies (1.54% in 2015–2019 and 1.40% in 2020).

One study based on data from 17 countries combined multifetal and singleton births. It showed an 18% decrease in all EPT births in Denmark and Norway during the most restrictive 3 months pandemic period.[4] However, another study maintained that EPT births did not fall in Norway.[3] If we assume that 10% of the pregnancies were related to multifetal EPT births, based on the proportion of preterm twins seen in this study (Table 1), then this suggests that singleton EPT births fell in Denmark by about 40% during the study period. This was compatible with the 73% (95% CI 14%–93%) reduction in EPT births found in the Danish National Patient Register-based study of all Danish singleton preterm births.[2] It was also similar to the 56% and 47% reductions in EPT births in March and April 2020 reported by a study based on the Danish Newborn Quality Database.[5]

Our findings suggest that the initial COVID-19 restrictions did not influence the gestational age distribution of multifetal pregnancies in Denmark, possibly because such mothers receive an intensive prenatal care regimen that increases their resilience to stress and anxiety. This is speculative, as no causal relationships have been identified, but associations between maternal anxiety and preterm births have been reported repeatedly for four decades.[2] Finally, the impact that combining singleton and multifetal pregnancies has on

Abbreviations: EPT, extremely preterm.

TABLE 1 Live twin births during the 2020 Danish lockdown and wider restrictions periods, compared to aggregate data from 2015–2019

Gestational age		Just live born twin births			Live born singletons and twins		
Category	Weeks + days*	2020	2015–2019	2020 vs 2015–2019	2020	2015–2019	2020 vs 2015–2019
Pandemic lockdown in Denmark (March 12 to April 14 2020)							
Term		*n* (%)	*n* per year mean (SD)	odds ratio (95% CI)	*N* (%)	*n* per year mean (SD)	odds ratio (95% CI)
Extremely PT	22+0–27+6	<5	<5	0.61 (0.01, 11.92)	<5	15 (3.67)	0.20 (0.04, 0.72)
Very PT	28+0–31+6	6 (9.0)	6.2 (2.28)	1.23 (0.31, 4.85)	44 (0.8)	42 (5.10)	1.07 (0.70, 1.64)
Moderately PT	32+0–36+6	24 (35.8)	28.8 (4.87)	1.02 (0.49, 2.11)	269 (5.0)	283 (17.4)	0.97 (0.82, 1.15)
Term	37+0–41+6	36 (53.7)	43.2 (11.9)	1.03 (0.51, 2.07)	4917 (91.0)	4964 (207)	1.15 (1.02, 1.31)
Late term	≥42+0	<5	<5	Not estimable	103 (1.9)	114 (18.2)	0.92 (0.71, 1.21)
NA		<5	<5		67 (1.2)	112 (20.0)	
Wider COVID-19 restrictions in Denmark (February 27 to September 30 2020)							
		N (%)	Mean (SD)	OR (95% CI)	*N* (%)	Mean (SD)	OR (95% CI)
Extremely PT	≤27+6	9 (1.7)	8.2 (1.92)	1.23 (0.42, 3.70)	72 (0.2)	84.6 (6.88)	0.85 (0.62, 1.16)
Very PT	28+0–31+6	35 (6.7)	35.6 (2.70)	1.07 (0.64, 1.78)	262 (0.7)	265 (11.3)	0.99 (0.83, 1.17)
Moderately PT	32+0–36+6	190 (36.5)	200 (25.2)	1.06 (0.82, 1.37)	1889 (5.0)	1932 (62.2)	0.97 (0.91, 1.04)
Term	37+0–41+6	285 (54.7)	323 (28.8)	0.92 (0.72, 1.18)	34 623 (91.0)	34 080 (988)	1.14 (1.09, 1.20)
Late term	≥42+0	<5	<5	Not estimable	833 (2.2)	842 (81.0)	0.99 (0.90, 1.09)
NA		<5	<5		368 (1.0)	732 (108)	

Note: The aggregate data of twin and singleton births have been included for comparison purposes.

Abbreviation: PT, preterm.

*Danish Neonatal Screening Database records gestational age in completed weeks.

data should always be considered, particularly when studying adverse outcomes that frequently occur in multifetal pregnancies.

FUNDING INFORMATION

None.

CONFLICT OF INTEREST

Authors have no conflicts of interest to declare.

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